

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Timothy A. Coleman

Application No.: 09/921,143

Group Art Unit: 1653

Filed: August 3, 2001

Examiner: Not Yet Assigned

For: Vascular Endothelial Growth Factor 2

**PETITION UNDER 37 C.F.R. § 1.137(b) FOR
REVIVAL OF AN UNINTENTIONALLY ABANDONED APPLICATION**

Box DAC

Assistant Commissioner for Patents
Washington, D.C. 20231

Applicant hereby petitions for revival of an abandoned application under 37 C.F.R. § 1.137(b). The application was unintentionally abandoned due to an incomplete response that was filed to the Notice to File Missing Parts of Nonprovisional Application, which was mailed on September 27, 2001. Applicant submits concurrently herewith: (1) a fee transmittal with appropriate fees and (2) Exhibits A-C.

I. Background

Although no written notice of abandonment has been received, on Wednesday, May 14, 2003, Applicant's representative, Melissa Pytel, was notified by a phone call from Ms. Roxanne Rawls of the United States Patent and Trademark Office ("PTO"), that the present application was abandoned. Applicant asserts that the abandoned status of the instant application occurred despite the exercise of due care and diligence on the part of Applicant and Applicant's representatives.

A timeline of events is provided below:

September 27, 2001: A "Notice to File Missing Parts of Nonprovisional Application" was mailed (hereinafter referred to as "the Notice"). A copy of the Notice is included herewith as Exhibit A. The Notice indicated that the Oath or Declaration was

unsigned, that a late filing fee surcharge of \$130 was due and that substitute drawings were required. Specifically, the Notice indicated that the drawing sheets did not have the appropriate margins in compliance with 37 C.F.R. § 1.84.

November 20, 2001: Applicant filed a timely response to the Notice by providing an executed Declaration and authorizing the Commissioner to charge the proscribed fee to Deposit Account No. 08-3425 (hereinafter referred to as "the Response"). A copy of the Response, along with the date-stamped return receipt postcard, is included herewith as Exhibit B. Inadvertently, the timely response submitted by Applicant did not include a submission of corrected drawings.

February 4, 2002; March 12, 2002; April 18, 2002; August 16, 2002, and September 12, 2002: Subsequent to filing the Response, Applicant diligently maintained the instant application by filing multiple Information Disclosure Statements on February 4, 2002; March 12, 2002, April 18, 2002, August 16, 2002; and September 12, 2002, in accordance with Applicant's duty of disclosure under 37 C.F.R. § 1.56.

December 13, 2002: Applicant mailed a Status Inquiry to be advised of the status of the instant application, because Applicant had not received any correspondence from the PTO subsequent to the mailing of Applicant's November 20, 2001 Response.

April 1, 2003 (approx.): Applicant's representative, Lin Hymel, received a phone call from Ms. Roxanne Rawls regarding the instant application.

April 9, 2003: After several attempts to contact Ms. Rawls, Applicant's representative, Melissa Pytel, spoke with Ms. Rawls regarding the instant application. At this time, Ms. Rawls merely requested a submission of replacement drawings. The status of the application was not discussed.

April 17, 2003: In response to the discussion with Ms. Rawls, Applicant prepared and filed Replacement Formal Drawings.

May 14, 2003: Ms. Rawls contacted Melissa Pytel, indicating that a Petition to Revive an Abandoned Application would need to be filed due to the incomplete response to the Notice to File Missing Parts.

May 21, 2003: After multiple phone calls with Ms. Rawls, in which alternatives to filing a Petition to Revive an Abandoned Application were discussed, Applicant's representative, Melissa Pytel contacted Ms. Doshie Day in the Office of Initial Patent

Examination (OIPR) to inquire whether a notice under 37 C.F.R. § 1.135(c) could be issued to avoid abandonment of the Application, since Notice of Abandonment had not been received by Applicant. Ms. Day indicated that she would discuss this case with someone in the Petitions Branch.

May 22, 2003: Applicant's representative, Melissa Pytel, left a message with Ms. Day, inquiring whether Ms. Day had the opportunity to speak with Petitions.

May 23, 2003: Applicant's representative, Melissa Pytel, left a message with Ms. Day, indicating that she (Melissa) would be out of the office the following week and that Michele Wales could be contacted in her absence.

May 29, 2003: Applicant's representative, Michele Wales, contacted Ms. Day to discuss the status of the application. Ms. Day confirmed that a Petition to Revive would have to be filed.

June 5, 2003: Applicant's representative, Melissa Pytel, checked the status of the Application in the Patent Application Information Retrieval (PAIR) system. As of June 5, 2003, the Application was still not indicated as abandoned.

II. Petition to Revive

Pursuant to 37 C.F.R. § 1.137(b), Applicants are required to submit a complete reply to the Notice to File Missing Parts, which was mailed on September 27, 2001 and the petition fee set forth in 37 C.F.R. § 1.17(m). Although Applicant previously filed Replacement Formal Drawings on April 17, 2003, copies of the Replacement Formal Drawings as filed April 17, 2003 and accompanying documents are included herewith as "Exhibit C." Applicant hereby authorizes the Commissioner to charge the proscribed petition fee under 37 C.F.R. § 1.17(m) to Deposit Account No. 08-3425. Applicant also asserts that the entire delay in filing the reply was unintentional, from the due date for the reply until the filing of the instant petition, as demonstrated by the evidence provided above.

Furthermore, as required by the Manual of Patent Examining Procedure (M.P.E.P. § 711.03(c)(III)(D) at page 700-154-155 (8th Ed. 2001)) when a Petition to Revive is not filed within one year of the effective date of abandonment, Applicant submits that the evidence provided above shows that Applicant only became aware of the abandonment of

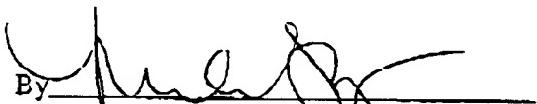
the instant application on May 14, 2003. Applicant further submits that the evidence provided above demonstrates how the delay in discovering the abandoned status of the instant application occurred despite the exercise of due care or diligence on the part of the Applicant, or Applicant's representative.

In sum, the instant application became abandoned due to the unintentional delay in responding to the Notice. Applicant has satisfied all of the requirements under 37 C.F.R. § 1.137(b) by providing (1) a complete reply to the Notice to File Missing Parts; (2) the petition fee set forth in 37 C.F.R. § 1.17(m); and (3) a statement that the entire delay in responding in full from the due date for the reply until the filing of the instant petition pursuant to 37 C.F.R. § 1.137(b) was unintentional. Furthermore, Applicant has satisfied the additional requirements where a petition pursuant to 37 C.F.R. § 1.137(b) is not filed within one year of the effective date of abandonment by: (A) providing information as to when Applicant first became aware of the abandonment of the instant application and; (B) showing how the delay in discovering the abandoned status of the instant application occurred despite Applicant's exercise of due care and diligence.

Applicant hereby requests that the instant petition under 37 C.F.R. § 1.137(b) for revival of an abandoned application due to the unintentional delay by Applicant be granted and the instant application be revived. In the event that an additional fee may be required, please charge the fees to our Deposit Account No. 08-3425.

Dated: June 9, 2003

Respectfully submitted,


By _____
Melissa J. Pytel (Registration No. 41,512)
Attorney for Applicant

HUMAN GENOME SCIENCES, INC.
9410 Key West Avenue
Rockville, MD 20850
Phone: 301-610-5764

MMW/MJP/ba

Exhibit A

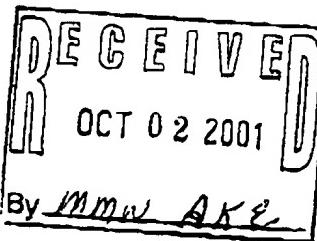


UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
www.uspto.gov

| APPLICATION NUMBER | FILING/RECEIPT DATE | FIRST NAMED APPLICANT | ATTORNEY DOCKET NUMBER |
|--------------------|---------------------|-----------------------|------------------------|
| 09/921,143 | 08/03/2001 | Timothy Coleman | PF112P6 |

22195
HUMAN GENOME SCIENCES INC
9410 KEY WEST AVENUE
ROCKVILLE, MD 20850



CONFIRMATION NO. 6449
FORMALITIES LETTER
QC000000006803645

Date Mailed: 09/27/2001

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given TWO MONTHS from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is unsigned.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(l) of \$130 for a non-small entity, must be submitted with the missing items identified in this letter.
- The balance due by applicant is \$ 130.

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Substitute drawings in compliance with 37 CFR 1.84 because:
 - drawing sheets do not have the appropriate margin(s) (see 37 CFR 1.84(g)). Each sheet must include a top margin of at least 2.5 cm. (1 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 1.5 cm. (5/8 inch), and a bottom margin of at least 1.0 cm. (3/8 inch);

*A copy of this notice **MUST** be returned with the reply.*

Customer Service Center
Initial Patent Examination Division (703) 308-1202

Exhibit B

HUMAN GENOME SCIENCES, INC.

Please date stamp and return to addressee on reverse side

Applicants: Coleman, T.

Docket No. PF112P6

Application No.: 09/921,143

Filed: August 3, 2001

Title: Vascular Endothelial Growth Factor-2



Documents Filed Via Hand Delivery on November 20, 2001

1. Postcard (1);
2. Fcc Transmittal for FY 2002 (with appropriate fees) (in duplicate);
3. Copy of Notice to File Missing Parts of Nonprovisional Application Filed Under 37 CFR 1.53(b) dated September 27, 2001;
4. Response to Notice to File Missing Parts;
5. Recitation Form Cover Sheet (in duplicate) and Assignment (2 pp); and
6. Declaration for Patent Application (2 pp).

MMW/JLK/kp

Attn.: Legal Department

**FEES TRANSMITTAL
for FY 2002**

(Substitute Form)

Present issues are submitted in loose

Patent fees are subject to annual revision.

Total amount of purchases

\$170.00

| | |
|--------------------------|----------------|
| <i>Complete if Known</i> | |
| Publication Number | 09/921,143 |
| Filing Date | August 3, 2001 |
| First Named Inventor | Coleman, T |
| Assignee Name | To Be Assigned |
| Sup. Art Unit | 1653 |
| Attorney Docket Number | PF112P6 |

METHOD OF PAYMENT

1. ☐ The Commissioner is hereby authorized to charge indicated fees and credit any deficiency paid to

Report Date: 08-3435

Reviewacco MN 101 Human Carnegie Sciences, Inc.

- Charge Any Additional Fee Required Under 37 CFR 33.110 and 117

Appear as small entity status

? **Karmen Földes**

- Payment Enclosed:

EEG CALCULATION

1. MAGIC SAVING SEAS

LARGE EDITION **SMALL EDITION**

| Fee Code | Fee (\$) | Fee Code | Fee (\$) | Fee Description | Fee Paid |
|---------------------|----------|----------|----------|------------------------|----------|
| 101 | 7.00 | 201 | 370 | Utility filing fee | |
| 106 | 350 | 200 | 100 | Design filing fee | |
| 107 | 510 | 207 | 250 | Plant filing fee | |
| 108 | 7.00 | 200 | 370 | Revenue filing fee | |
| 114 | 100 | 214 | 80 | Provisional filing fee | |
| SUBTOTAL (1) | | | | | \$1100 |

SUBTOTAL (1) **\$0.00**

3 EXTRA CLAIM FEE\$

| | Extra Claims | Net from Delete | Fee Paid |
|-----------------------|-----------------|--------------------|----------|
| Total Claims | | \$13.00 | |
| Independent Claims | -20' | | |
| Multiple Dependent | -3' | \$64.00 | |
| | | \$260.00 | |

| Large Entity For Cost | Small Entity For Cost | | | |
|-----------------------------|-----------------------------|-----|-----|---|
| 103 | 15 | 203 | 9 | Claims in excess of 20 |
| 102 | 54 | 202 | 42 | Independent claims in excess of 3 |
| 104 | 230 | 204 | 100 | Multiple dependent claims if not paid |
| 108 | 34 | 208 | 42 | " Relate to independent claims over original patents |
| 110 | 18 | 210 | 9 | " Relate claims in excess of 30 and over original patents |
| SUBTOTAL (2) | | | | \$0.00 |

SUBTOTAL (2) \$0.00

or number previously used of 200000. This requires less time.

EFF CALULATION (continued)

3. ADDITIONAL FEES

| Fee Code | Large Entity | | Small Entity | | Fee Description | Fee Paid |
|-------------|-----------------|--------------|-----------------|--------------|--|----------|
| | Fee (\$) | Cdu. Code | Fee (\$) | Cdu. Code | | |
| 102 | 140 | 203 | 55 | 55 | Surcharge - late filing fee or 24hr | \$150.00 |
| 127 | 50 | 227 | 25 | 25 | Surcharge - late provisional application fee or cover sheet | |
| 128 | 130 | 220 | 130 | 130 | Non-English document mark | |
| 142 | 1,200 | 302 | 300 | 300 | Utility issue fee (or reduced) | |
| 145 | 260 | 195 | 200 | 200 | Publication fee for early, voluntary, or normal publication | |
| 179 | 740 | 279 | 370 | 370 | Request for Continued Examination (RCE) | |
| 193 | 150 | 098 | 130 | 130 | Processing fee, except in promotional publications | |
| 196 | 150 | 120 | 150 | 150 | Submission of Information Disclosure Statement | |
| 122 | 50 | 122 | 50 | 50 | Processing fee for promotional applications | |
| 146 | 740 | 246 | 270 | 270 | Filing a continuation after final rejection (37 CFR 1.129(e)) | |
| 192 | 740 | 249 | 270 | 270 | For each additional invention to be examined (37 CFR 1.129(o)) | |
| 145 | 100 | 145 | 100 | 100 | Certificate of correction | |
| 147 | 2,320 | 147 | 2,320 | 2,320 | Request for expedited reexamination | |
| 099 | 8,080 | 099 | 3,500 | 3,500 | Request for inter partes reexamination | |
| 148 | 110 | 208 | 55 | 55 | Statement of disclaimer | |
| 115 | 110 | 215 | 55 | 55 | Extension for reply - within first month | |
| 116 | 100 | 216 | 200 | 200 | Extension for reply - within second month | |
| 117 | 920 | 217 | 400 | 400 | Extension for reply - within third month | |
| 118 | 1,440 | 218 | 720 | 720 | Extension for reply - within fourth month | |
| 174 | 1,260 | 228 | 480 | 480 | Extension for reply - within fifth month | |
| 119 | 520 | 219 | 100 | 100 | Notice of appeal | |
| 120 | 320 | 220 | 100 | 100 | Filing a brief in support of an appeal | |
| 121 | 280 | 221 | 140 | 140 | Request for oral hearing | |
| 122 | 130 | 122 | 130 | 130 | Petition to the Civil Subsidiary | |
| 140 | 110 | 260 | 55 | 55 | Petition to review abandoned application | |
| 141 | 1,260 | 241 | 480 | 480 | Petition to review an unreasonably abandoned application | |
| 091 | 1,230 | 091 | 1,230 | 1,230 | Acceptance of an unintentionally delayed claim for priority | |
| 501 | 5 | 501 | 5 | 5 | Mailed copy of patent, regular service | |
| 501 | 40 | 501 | 40 | 40 | Recording each patent assignment per property (times number of properties) | \$40.00 |

Submitted By Complete if applicable
Name (print/last) Jonathan L Klein Registration No 41119 Telephone 301-231-6013
Signature  Date 11/20/21

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and documentation on PTO-103e.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of Coleman, T.

Application Serial No 09/921,134

Group Art Unit: 1653

Filed August 3, 2001

Examiner: Not assigned

For Vascular Endothelial Growth Factor-2

Attny Docket No.: PF112P6

RESPONSE TO NOTICE TO FILE MISSING PARTS

Commissioner For Patents
BOX MISSING PARTS
Washington, D.C. 20231
Sir.

In response to the Notice to File Missing Parts mailed September 27, 2001, submitted herewith is: (a) an executed Declaration and Power of Attorney, (b) a Fee Transmittal for FY 2002 with appropriate filing fee (in duplicate); and (c) a copy of said Notice.

The Commissioner is hereby authorized to charge the required fee of \$130.00 and any other fee deemed necessary to Deposit Account No. 08-3425.

Respectfully submitted,

Dated: November 20, 2001


Jonathan L. Klein Reg. No. 41,119
Attorney for Applicants

Human Genome Sciences, Inc.
9410 Key West Avenue
Rockville, Maryland 20850
301-251-6015 (telephone)

MMW/JLK



UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
www.uspto.gov

| APPLICATION NUMBER | FILING/RECEIPT DATE | FIRST NAMED APPLICANT | ATTORNEY DOCKET NUMBER |
|--------------------|---------------------|-----------------------|------------------------|
| 09/921,143 | 08/03/2001 | Timothy Coleman | PF112P6 |

CONFIRMATION NO. 6449

22195
HUMAN GENOME SCIENCES INC
9410 KEY WEST AVENUE
ROCKVILLE, MD 20850

FORMATILITIES LETTER



OC00G000000803645

Date Mailed: 09/27/2001

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(d)

Filing Date Granted

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given TWO MONTHS from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is unsigned
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(l) of \$130 for a non-small entity, must be submitted with the missing items identified in this letter
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A copy of this notice MUST be returned with the reply.


Customer Service Center
Initial Patent Examination Division (703) 308-1202

PART I - ATTORNEY/APPLICANT COPY

U.S. PATENT AND TRADEMARK OFFICE

BOX ASSIGNMENTS
Case Docket No. PF112P6

U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

**RECORDATION FORM COVER SHEET
PATENTS ONLY**

To the Honorable Commissioner of Patents and Trademarks.
Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

Timothy A. Coleman

Additional name(s) of conveying party(ies) attached?
Yes No

3. Nature of conveyance

Assignment Merger
 Security Agreement Change of Name
 Other _____

Execution Date 11/01/01

2. Name and address of receiving party(ies):

Name Human Genome Sciences, Inc.
Street Address 9410 Key West Avenue
City Rockville, Maryland 20850

Additional name(s) of conveying party(ies) attached?

Yes No

4. Title Vascular Endothelial Growth Factor-2

5. Application number (s) or patent numbers (s)

A. Patent Application No (s)

09/921,143

If this document is being filed together with a new application,
the execution date of the application is

B. Patent No

Additional numbers attached?

Yes No

6. Name and address of party to whom correspondence concerning documents should be mailed:

Human Genome Sciences, Inc.
9410 Key West Avenue
Rockville, Maryland 20850

Telephone: 301-309-8504 Facsimile: 301-309-8439

7. Total of applications and patents involved

1

8. Total Fee (37 CFR 3.41) \$40.00

Enclosed (By check in total of filing fee and Assignment Recordation Fee)
 Authorized to be charged to Deposit Account

9. Deposit Account No. 08 3425 (Attached duplicated copy of this page if paying by deposit account)

10. If any additional fees due in connection with the recordation of this Assignment, please charge the same to
Deposit No. 08-3425

11. Statement and Signature

The best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a
true copy of the original document

Jonathan L. Klein

Name of Person Signing

41,119

Registration No

Signature

11/20/01

Date

Total number of pages including cover sheet, attachment, and documents [3]

ASSIGNMENT

For good and valuable consideration, the receipt of which is hereby acknowledged, the undersigned, Timothy A. COLEMAN, hereby sells, assigns, transfers, and sets over to Human Genome Sciences, Inc. ("Assignee") having a place of business at 9410 Key West Avenue, Rockville, MD 20850, its successors, assigns and legal representatives, his entire right, title and interest, including the right to sue and collect for all past, present and future damages, for the United States of America, including all its territories and possessions, and all other countries,

- (a) in and to the invention(s) known as Vascular Endothelial Growth Factor-2 for which application(s) for patent in the United States of America has (have) been executed by the undersigned on November 1, 2001 (also known as United States Application No 09/921,143, and filed August 3, 2001), in any and all applications thereon, in any and all Patent(s) therefor, and
- (b) in any and all applications that claim the benefit of the patent application listed above in part (a), including continuing (continuation, divisional) applications, reissues, extensions, renewals and reexaminations of the patent application or patent therefor listed above in part (a), to the full extent of the term or terms for which patents issue, and
- (c) in any and all inventions described in the patent application listed above in part (a), and in any and all forms of intellectual and industrial property protection derivable from such patent application, and that are derivable from any and all continuing applications, reissues, extensions, renewals, and examinations of such patent application, including, without limitation, patents, applications, utility models, inventor's certificates, and designs together with the right to file applications therefor; and including the right to claim the same priority rights from any previously filed applications under the International Agreement for the Protection of Industrial Property, or any other international agreement, or the domestic laws of the country in which any such application is filed, as may be applicable;

all such rights, title and interest to be held and enjoyed by the above-named Assignee, its successors, legal representatives and assigns to the same extent as all such rights, title and interest would have been held and enjoyed by the Assignor had this assignment and sale not been made.

The undersigned further agrees that said Assignee may apply for and receive patent(s) for said invention(s) in its own name, and agrees to execute all papers necessary in connection with said application(s) and any continuing application(s) (continuation, divisional, or continuation-in-part), substitutes, renewals, reissues, reexaminations, extensions, and all other patent applications on all such invention(s), including all rightful oaths, declarations, powers of attorney and other papers, and agrees to execute separate assignments in connection with such application(s) as the Assignee may deem necessary and expedient, and agrees to communicate to said Assignee, its successors, assigns, and representatives all facts known to the undersigned relating to said invention(s) and the history thereof; and agrees to cooperate fully and completely with said Assignee, its successors, assigns, and representatives in securing, maintaining, and enforcing proper patent protection for said invention(s) and for vesting title to said invention(s) and all patent applications and all patents on said invention(s) in Assignee, its successors, assigns and representatives.

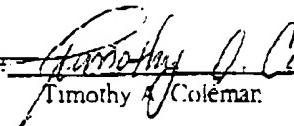
The undersigned agrees to execute all papers necessary in connection with any interference that may be declared or litigation that may be instituted concerning the application(s) or patent(s) referred to above and to cooperate fully and completely with the Assignee, its successors, assigns, and representatives in obtaining evidence and going forward with such interference or litigation, including providing testimonial evidence.

The undersigned hereby represents and warrants to Assignee, its successors, assigns and representatives that no assignment, grant, mortgage, license or other right or agreement affecting the rights and property herein conveyed has been or will be made to others by the undersigned and that full right to convey the same as expressed herein is possessed by the undersigned.

The undersigned hereby grants the power to the Practitioners at Customer Number 22105 as my attorney(s) or agent(s) with full power to insert on this Assignment any further identification which may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

IN WITNESS WHEREOF, this Assignment is executed by the undersigned on the date opposite his signature

Inventor's Signature:

 Date: 11/1/01

Timothy A. Coleman

DECLARATION FOR PATENT APPLICATION

As a below named inventor, I declare that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

VASCULAR ENDOTHELIAL GROWTH FACTOR-2

the specification of which was filed on August 3, 2001 as Application Serial No. 09/921,143 and was amended on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a).

I hereby claim foreign priority benefits under 35 U.S.C. § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application, which designated at least one country other than the United States listed below, and have also identified below any foreign application for patent or inventor's certificate, or PCT international application having a filing date before that of the application on which priority is claimed. Prior Foreign Application(s):

| <u>(Number)</u> | <u>(Country)</u> | <u>(Day/Month/Year Filed)</u> | <u>Priority Claimed</u> |
|-----------------|------------------|-------------------------------|-------------------------|
| | | | <u>Yes</u> <u>No</u> |

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below:

| | |
|---|---|
| <u>60/223,276</u> <u>(Provisional App. Serial No.)</u> | <u>August 4, 2000</u> <u>(Filing Date)</u> |
|---|---|

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) or under § 365(b) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

| | | |
|---------------------------------|----------------------|---|
| <u>(Application Serial No.)</u> | <u>(Filing Date)</u> | <u>(Status: patented, pending, abandoned)</u> |
|---------------------------------|----------------------|---|

I hereby appoint the Practitioners at Customer Number 22195 as my attorney(s) or agent(s) with full power of substitution, association, and revocation to prosecute the application identified above, including any continuation or divisional applications, and to transact all business in the U.S. Patent and Trademark Office connected therewith. Direct all correspondence to the above-mentioned Customer Number, namely 22195

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole inventor: Timothy A. COLEMAN

Inventor's signature: Timothy A. Cole Date: 11/1/01
Residence: 7512 Boxberry Terrace, Gaithersburg, MD 20879 Citizenship: US
Post Office Address: same as above

Exhibit C

RETURN RECEIPT CARD
(MPEP § 503)

| | |
|--------------|--|
| OIPE: | Please Date Stamp In The Box Below And Return To Addressee |
|--------------|--|



Application of:
Timothy A. Coleman

Docket No.: PF112P6

Application Serial No.: 09/921,143-Conf. #6449

Art Unit: 1653

Filed: August 3, 2001

Examiner: Not Yet Assigned

Title: Vascular Endothelial Growth Factor 2

**The following documents were filed by Human Genome Sciences, Inc.
via hand delivery on April 17, 2003:**

1. Return Receipt Postcard;
2. Communication;
3. Preliminary Amendment;
4. Submission of Replacement/Substitute Drawings;
5. Substitute Drawings (68 Sheets, Figs. 1A-311).

MMW/MJP/AKR/lcc Attn: Legal Dept.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of
Timothy A. Coleman

Application No.: 09/921,143

Group Art Unit: 1653

Filed: August 3, 2001

Examiner: Not Yet Assigned

For: Vascular Endothelial Growth Factor 2

COMMUNICATION

Commissioner for Patents
Washington, DC 20231

Approximately around April 1, 2003, Applicants' representative received a phone call from Roxanne Rawls at the United States Patent and Trademark Office (USPTO) requesting the submission of replacement drawings, as the margins of the current drawings were not in compliance with 37 C.F.R. § 1.84. Mrs. Rawls referred to the September 27, 2001, "Notice to File Missing Parts of Nonprovisional Application," which indicated that the submitted drawing sheets did not have the appropriate margins in compliance with 37 C.F.R. § 1.84. Inadvertently, no corrected drawings were filed with the response to the formalities letter. Therefore, submitted concurrently herewith is a Submission of Substitute/Replacement Drawings in compliance with 37 C.F.R. § 1.84.

No fee is believed due for this submission. In the event that a fee is required in connection with this submission, please charge the required fee to Deposit Account No. 08-3425.

Respectfully submitted,



Melissa J. Pytel

Registration No. 41,512

HUMAN GENOME SCIENCES, INC.
9410 Key West Avenue
Rockville, Maryland 20850
(301) 610-5764
Attorney for Applicants

Dated: April 17, 2003

Docket No.: PF112P6
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Timothy A. Coleman

Application No.: 09/921,143

Group Art Unit: 1653

Filed: August 3, 2001

Examiner: Not Yet Assigned

For: Vascular Endothelial Growth Factor 2

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, DC 20231

Dear Sir:

Prior to examination on the merits, please amend the above-identified U.S. patent application as follows. Applicants submit herewith: (a) Communication; (b) Submission of Replacement/Substitute Drawings; and (c) 68 sheets of drawings containing Figures 1A-31U.

Please amend the specification as follows.

In the specification:

Please replace the paragraph beginning on page 7, line 23 with the following rewritten paragraph:

~~Figure 31A-G~~Figure 31A-U shows the nucleotide sequence of the pVGI.1 vector construct containing the VEGF-2 insert (SEQ ID NO:36).

Remarks

The specification was amended to replace language reciting, "Figure 31A-G" with language reciting, "Figure 31A-U." This amendment is requested upon approval of the Submission of Formal Drawings, submitted concurrently herewith. Applicants submit that the amendment does not introduce new matter under 35 U.S.C. § 132. Therefore, entry of the amendment is respectfully requested.

Conclusion

No fee is believed due for this submission. In the event that a fee is required in connection with this submission, please charge the required fee to Deposit Account No. 08-3425.

Respectfully submitted,

Dated: April 17, 2003



Melissa J. Pytel

Registration No. 41,512
HUMAN GENOME SCIENCES, INC.
9410 Key West Avenue
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(301) 610-5764
Attorney for Applicants

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Timothy A. Coleman

Docket No.: PF112P6

Application No.: 09/921,143

Group Art Unit: 1653

Filed: August 3, 2001

Examiner: Not Yet Assigned

For: Vascular Endothelial Growth Factor 2

SUBMISSION OF REPLACEMENT/SUBSTITUTE DRAWINGS

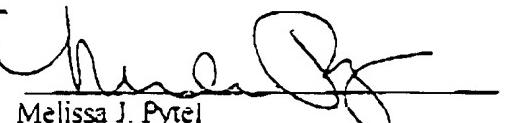
Attn: Draftsperson
Commissioner for Patents
Washington, DC 20231

Sir:

Applicants submit herewith replacement/substitute Figures 1A-31U (68 sheets) to replace Figures 1A-31G (47 sheets) as originally filed. Additional pages are due to reorganization of the drawings in order to comply with the margin requirements under 37 C.F.R. § 1.84. No new matter is introduced.

No fee is believed due for this submission. In the event that a fee is required in connection with this submission, please charge the required fee to Deposit Account No. 08-3425.

Respectfully submitted,



Melissa J. Pytel

Registration No. 41,512

HUMAN GENOME SCIENCES, INC.

9410 Key West Avenue

Rockville, Maryland 20850

(301) 610-5764

Attorney for Applicants

Dated: April 17, 2003

FIG. 1A

MATCH WITH FIG. 1A

AGATTCCTGAAAGTATTGTTATGAGTGAGAAAGACTCAAATGCCATCCACGGGAGGT
360
- - - + + - - - + + - - - + + - - - + + - - - + + - - - + + - - - +
TCTAGAACCTTTTCACTTAATCTACCTCTCTTCTTGAGTTACGTTACGCTGCCCTCCACA
361 I L K S I D N E W R K T Q C H P F E V S
- - - + + - - - + + - - - + + - - - + + - - - + + - - - + + - - - +
CTTATGATTTTGGAGGAGTTGGAGTCGGGACAAACACCTTCCTTAACTCCTCCATAGTG
420
- - - + + - - - + + - - - + + - - - + + - - - + + - - - + + - - - +
CATATCTAACCCCTTCCAAACCTCTCAGCGCTTGGAAAGAAATTTGGACCTACAC
421 I D V S K E F G V N A T W F ? F R C P P C V
- - - + + - - - + + - - - + + - - - + + - - - + + - - - + + - - - +
TGTCCCGTCTPACAAATTTGGGGTTGCTGCHLTTAGTGAGSSCTGGCAGGGCATGAAACCCA
480
- - - + + - - - + + - - - + + - - - + + - - - + + - - - + + - - - +
ACAGGCCAGATGTCACACCCCCAACGGACGGTTATCAGCTTCTGTTCTGTCGTT
481 S V Y R S G G C C N S E G L Q C H T S
- - - + + - - - + + - - - + + - - - + + - - - + + - - - + + - - - +
GCACGGCCTTACCTCGAAGACGTTATTTGGAAATTAGTGAGCTTCATCTCAAGGCCCP
540
- - - + + - - - + + - - - + + - - - + + - - - + + - - - + + - - - +
CGTGCTCCATGGAGCTCTTCTTGCAAAACTTTTGAACTTACGGAAGAGTCCGGGQT
541 T S Y L S K T L F E I T V P I S Q G P K
- - - + + - - - + + - - - + + - - - + + - - - + + - - - + + - - - +
AAACCAGTAACTACATTGTTTGGCAATCACACATTCCCGATGCCATCTAAACTGGAG
600
- - - + + - - - + + - - - + + - - - + + - - - + + - - - + + - - - +
TTGGGCTTACGGTAAAGTGGTAAAGTGGTGAAGGAGCCCTACCGTAAGGTTTGACCTTC
601 P V T J S F A N H W S C R C M S K L D V

MATCH WITH FIG. 1C
FIG. 1B

MATCH WITH FIG. 1B

66] TTTACAGACAAGTTCATTCCATTATAGACGTTCTGCCAGGCGAACCTACAGTC
- +-----+
AATATCTGGTTCAAGTHGGTAATTAATCTGAAAGGCAGGTCTGGTTCTGATGTTACAG
Y R Q V H S I I R R S L P A T L P Q C Q
- +-----+
AGGAGGGAAACAAGACCTGGCCCACCAATTGAAATGGAAATAATCAGATGCGAGATGDC
72] - +-----+
TCCCTGCTCTGGACGCCCTGGTTAAATGAACTTACCTAGACGTCCTAGB
A A N K C C P T W N Y M W N H I C R S L
- +-----+
TGGCTTACAGAGATTCTAGTTTCCCTGGATGCTGGATGACTCACCPAGATGGTC
78] - +-----+
ACCGAGTCCTTTAAATCAAAHCCGGCTACGACCTCTACTGAGTTGCTAACCTAAGG
A Q E D F H S S D A S C D S T D S T D G F H
- +-----+
ATGACATCTCTGGACCAAACAGGAGCTGGATGAGAGACTGCTGGAGAG
84] - +-----+
TACTGTAGACACCTTGTTGTCCTGGCCTACTTCCTGGAGCTGAGTCAGTC
E I C S P N K E L D E E T C Q C V C R A
- +-----+
CGGGCTTGGCTTGCGAGCTGGTGGCCACAGAACCTGAGAAACTCATCCAGT
90] - +-----+
CCCCGGAGCCGGAGGGTGGACACCTGGCTTCTGATGCTTGTGAGTACCTCA
G L R P A S C G P H K E L D R W S C Q C C

3 / 68

MATCH WITH FIG. 1D

FIG. 1C

MATCH WITH FIG. 1C

4 / 68

| | |
|-----|--|
| 96] | GGTGCTGTAAGAACAAUACCTTCCTCCAGCUAATGTGGCCCAACCGAAATTGATGAAAG 1021 |
| | CACGACATTTGTTTCAAGAAGGGGTCGGTTACACCCGGTGCCTCTAAACTACTTT V C K R F L P S Q C G A M R E F D E N |
| | AACACATGCCAGTAGTGGTAWGTPAAGAACCTGGCCCTAGAAAATCACCCCCCTAAATCTGAA 1080 |
| | TGTTGACCTGACACAATACATTTTCTGGACGGGSTMWAGTGGGATTAGGACCCTT T C Q C V C R T C P R N Q P L N P G K |
| | PAATGTGCCCTTGAAATGTAAGAACAGAACATGTTAAAGGAAPCCAGTTC 1031 |
| | TTAACCGGACACTTACATGTTCAAGTCTTACGAACTTACGAAATTCTTCTCAAAG C A C E C T E S P Q K C L I R G K F H |
| | ACACCCAAACATGGAGCTGTACAGACGGCAATCTACGAAACGGCTTGTCAGC 1141 |
| | TTGGTGGTTTGTACCTGACATGTCACATGTCAGCTGGCTTCCGAACACTTC H Q T C S C Y R R P C T N R Q K A C E P |
| | CAGGAAATTCAATAGTGAAGAAGTGTGCTTGTGTCCTCAATTGGCAAAGACCC 1201 |
| | GTCCTAAAGGTTATCACTTCTTCAACAGCAACACAGGAAGTATAACCGTGTGGTG G F S Y S E E V C R C V P S Y W Q R P Q |

FIG. 1D

MATCH WITH FIG. 1E

MATCH WITH FIG. 1D

5 / 68

| | | | | | | |
|--|--|--|--|--|--|--|
| <pre> AAATGAGCTAACATTGACTTTTCCAGT?CATCGATTCTTATTTGAAAC?GTCT 1261 TTTACTCGATTCATGACAAGGTCAGG?AGCTTAAACATATACTTTTGACACA M S </pre> | <pre> TGGCACTGTGAACTGGCTGCAAGAAGACCTTGTGGTCCATGCCAAAGAGCA 1320 ACGCTGTCATCTGAGACACTTGCTCTGGGACACCCAGGTACGATTGTTCTGT </pre> | <pre> AAAGCTGCTGCTTCTGACCAAGTGGATAACTTACAGAAAAGAACCTGAGCTCACTG 1381 TT?CAGACAGAAAGGACTTGGTACACCTATGMAATGTCCTAACCTGAGCTGAG C </pre> | <pre> CAAAGGCCCTTTGTAAGAC?GGTTTGCCHATAGCCAACACCCAGATTTCCCTC 1440 GTTTCCGGAGAAATTCTGACCAAAACGGTACCTGGTTGTCGGTCTTAAGGAG </pre> | <pre> TTGTCATTCTTAAAGAAATGACTTTTATTTCTCTAAATAATTCCTCTGC 1501 ACACTTGGAAATTCTACTGATTTTAAAGGTTGATTTTAACTTAAACACAG A </pre> | <pre> AT?CTCTTTATAGCAACAAATGGTAAACCTACTGGTACATTATTTTATTCAT 1561 TAAGTAAKATATCTGTTSTYGTAACTGTTGTTGTCACCTAGTTAAAAAGTAGT P </pre> | <pre> GCAAAATTTGTTTAAATAGAAATGGATTATTAATAAA 1621 CGTttttATACAAATTATTTTAACTTAACTTAACTTAACTTAACTTAACTTAACTTAA T </pre> |
|--|--|--|--|--|--|--|

FIG. 1E

1 CGAGGCCACGGCTTATGCAAGAAAGATCTGGAGCCAGTGTACGGCTCTGGCTCAGTGT
 AGATGAACTCATGACTGTACTCTACCCAGAATAATTGGPAAATGTAAGTGAGCTTAAG
 W T V L Y P E Y W K K Y K C Q L R

61 GAAAGGAGGCTGGCAAACATAACAGAGAACGGCCAACCTCAAGGACAAGAGAC
 X G G W Q H N R E Q A N L N S R T E E T
 TATAAAATTGCTGCAGCACATTATACTAGAGATCTTGAACTATTATAATGAG
 I K F A A R H Y N T Z I L K S T D N E W
 GAGAAAGACTCAACTGCATGCCACGGAGGTGTGTATAGATGTTGGGGAGGAGTTGGAGT
 R K T Q C M P R E V C I D V G E F 3 V
 CGCGACAAACCTTCCTTAACTCCCTGTTCTACACATGTTGGGGTTGCG
 R T N T F F K P F C V S V R C G G C S

121
 161
 241
 301

MATCH WITH FIG. 2B

FIG. 2A

MATCH WITH FIG. 2A

421 CGAAATTGACGTGCCCTTCAAGGCCCAACCCAGTCACATTCAGTTTGCCLETPCA
 E J P V P L S Q G P W P V T I S F A H H

481 CACTTCTGGCCCTGGATGCTTAACCTGGATTGTTACAGACAAAGTCATTCATTAAG
 T S C R C K S K L D V Y R Q V H S Y I R

541 ACGTTCCCTGCCAGCAGCACTACCACAGCTTAGGCAGGGAAACAGCTGCCAACCAA
 R S I P A T L P Q C Q A A W K T C P T N

601 TTYACATCTGGAAATAATCACAATCTGGATGCTTGGCTTCAAGAAAGTTTAAAGTTCTG
 Y W N N R H J C R C L A Q E D F W F S S

661 CGATGCTGGAAATGACTAACAGTGTTGATTCCATGACCATCTGTGACCCAAACGGAGCTP
 D A G D C S ? D G F R D I C G P N K E L

721 GGTTCAAGGACCPSTWGTGTGCTGGCAAGCCCGCTGGCTGGCTGGCTGGCTGGCT
 D B L T C D C V C R A G I, R P A S C G F

MATCH WITH FIG. 2C**FIG. 2B**

MATCH WITH FIG. 2B

781

CCACAAAGAACTAGAACAGAACTCTATGCCAGTGTCAGTCAGTCTTCCCCAG
 H K E L D R W S C Q C V C R N K L P F F S

841

CCCATCTGGGCCAACCGGAAATTGATGAAKAPCACATGCCAGTGTCAGTCTTCCCCAG
 Q C G A N R E F D E H Y C Q C V C R R T

901

CTGCCCGAGMATAACCCCTTAATCTGGAAATCTGCCCTGTGAAATCTACAGAAACTCC
 C P R N Q F L N P G R C H C E C T E S P

961

ACAGAAAWGCTTGTTTAAAGGAAGTTCACCAACCATGCCAGCTGTTAGACAG
 Q R C L L R G K R F H H Q T C S C V R R

1021

GCCATAGTACGAAACCCGCCAGPAGGCTTGTSAGGCCAGGATTCTCATATCTGAGAGAAGTGTG
 P C T W R Q R C E P G F S Y S B E V C

1081

TCGTTGTTGTTCCCTCATATGGCPAGACCCACAAATGAGATTCTACTGTTTCCA
 R C V P S Y W Q R P Q M S

MATCH WITH FIG. 2D**FIG. 2C**

MATCH WITH FIG. 2C

FIG. 2D

50

| | | |
|--------|--|------------|
| Peg10 | MRIACULL LSCGYAHV ACEAEIPREY IEFLARSQIH SIRDIOPLLE | |
| Peg11b | MNRCWAHLL SLCCYRIVS AGCDPITPEI YEM SPKFIY SFDDOLPLIH | |
| Veg1 | MWFLU SWHMSAHL LY..... | I.HHAKWSQA |
| Veg12 | MIV LYPLYRKK CO..... | LRKGCGWQHN |

100

| | | |
|--------|--|-----------------------|
| Peg10 | IDSVGSLDSL DIS.RAKCWH AIKHVZERKRP LPYRKKSI | [[AVP |
| Peg11b | GDP.GLUDCA ELDNMWRSH SGCELES | LAAGRRSLG S. HIA[PAM] |
| Veg1 | A2MAE | GGCQ KHEVVKWD VYQR |
| Veg12 | RIDQANLNSTI CETIKAAAH YNTCLLKSD NEWRK | |

150

| | | |
|--------|--|--|
| Peg10 | AV[TKIRIVY LIPRSoyDPI SANFLWPPC VFWWRIGCC NISSWGDPS | |
| Peg11b | AT[TKIRIVY LISRR IDR] MANFLWPPC VFWWRIGCC NISSWGDPS | |
| Veg1 | S[TKIRIVY DIFQYPDI CYTIIKSC VPLMPCGCC NDCCLV[P] | |
| Veg12 | TQCPREVCV I DVCKFICVAT KTFKPPC VSYVRGGCC NSEGCIQ[MNT | |

200

| | | |
|--------|---|-----------|
| Pdca | RMTHRSYKVM KWCYVKKPK LKCVQVRLC HLCQG | AT |
| Peg11b | OMQLRPVOMR KICIVRKKP FKAIVILED HLAQG | ETVAAMRPT |
| Veg1 | ESNITMOIM RIK PH. OC OIGEMST LO HNKQDFRKK DRARCEKKSV | |
| Veg12 | SISYLSK115 EIT. VPLSOC PKFVLISEAN HISQYJSLK DYRQWHSII | |

FIG. 3A

| | | | | |
|-----|---------------------------------|--|--|-----|
| 20 | Pdgta Pdgib Veqf veqf2 | TSNPD YRLEDIGMR. RSPGCSQR AKIPQIRAVI RGK RRSLPAIUPC CQANWTCPT | RIVVRPPK GKHKT KHNI EKTAKEI IIC SNGPPI P KSGQKIKRK KSYRK SWSVY VCAECIWW NMAMNNI ICPT CLAOEDMFS SOAGDESIDC | 300 |
| 251 | Peglo Peglb Veqf veqf2 | A EGP HDICCPNKE | CSR RAKHFL VJDP QICKCSCKNI HSCCCVCKNK | 350 |
| 301 | Pdgfc Pdgfb Veqf veqf2 | | CTISPKCLL | 398 |
| 351 | Pdgfa Pdgfb Veqf veqf2 | | CTISPKCLL | 405 |

FIG. 3B

PERCENTAGE (%) OF AMINO ACID IDENTITIES BETWEEN
EACH PAIR OF GENES IS SHOWN IN THE
FOLLOWING TABLE

| | PDGF α | PDGF β | VEGF | VEGF-2 |
|---------------|---------------|--------------|------|--------|
| PDGF α | | | | |
| PDGF β | 48.0 | | | |
| VEGF | 20.7 | 22.7 | | |
| VEGF-2 | 23.5 | 22.4 | 30.0 | |

FIG. 4

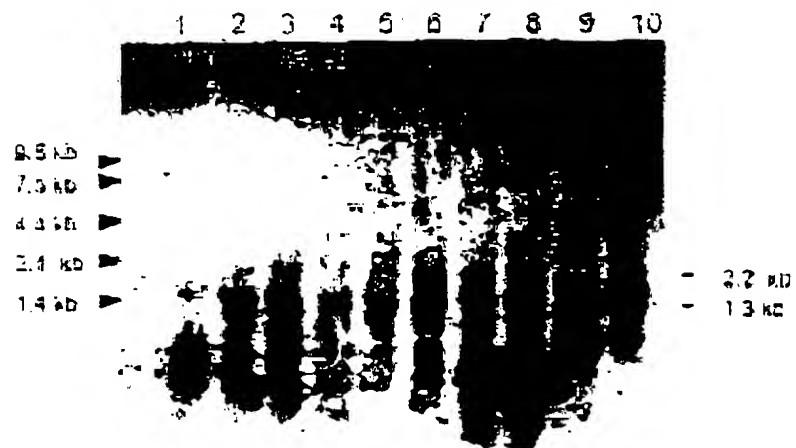
Expression of VEGF2 mRNA in
Human Breast Tumor Cells



- Lane 1. normal breast tissue
Lane 2. breast tumor tissue
Lane 3-9. breast tumor cell lines.

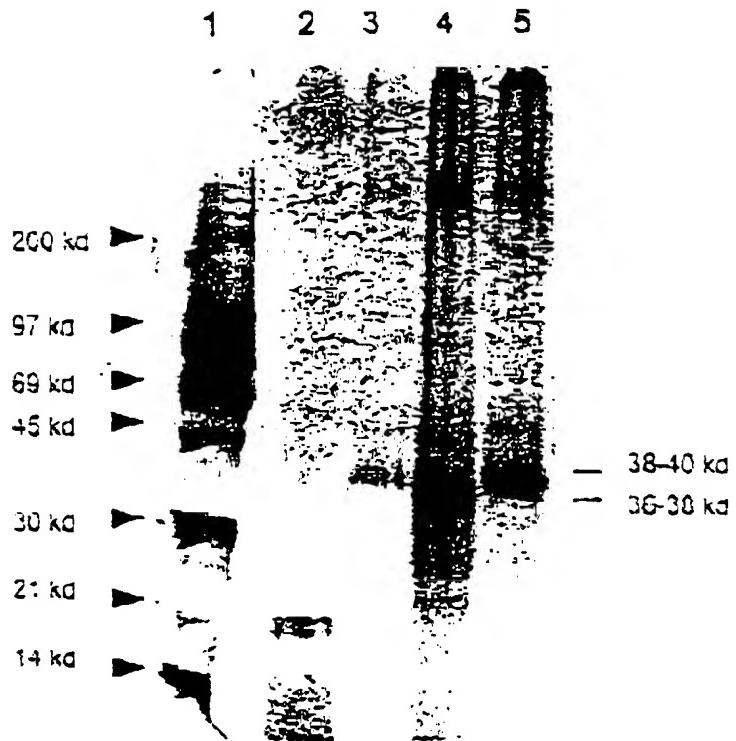
FIG. 5

Expression of VEGF-2 mRNA in Human Adult Tissues



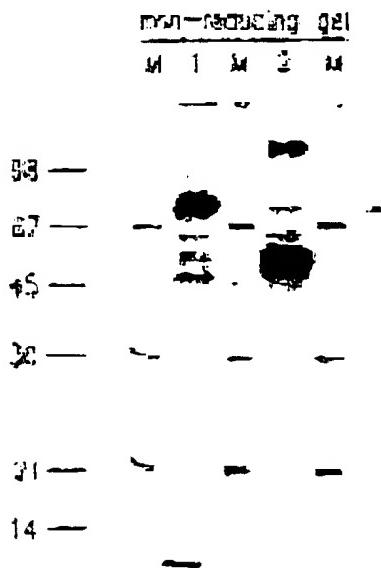
- | | | | |
|----|--------------|-----|-------------|
| 1. | Ovary | 6. | Lung |
| 2. | Testes | 7. | Spleen |
| 3. | Gall Bladder | 8. | Prostate |
| 4. | Kidney | 9. | Hippocampus |
| 5. | Liver | 10. | Heart |

FIG. 6



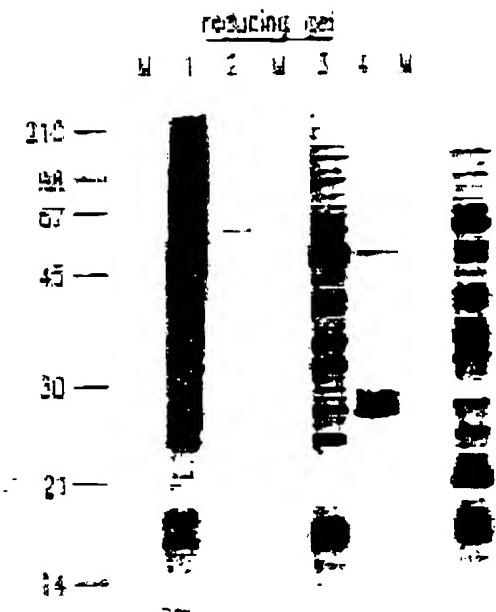
- Lane 1: 14-C and rainbow M.W. marker
Lane 2: FGF control
Lane 3: VEGF2 (M13-reverse & forward primer)
Lane 4: VEGF2 (M13-reverse & VEGF-F4 primer)
Lane 5: VEGF2 (M13-reverse & VEGF-F5 primer)

FIG. 7



Lane M: Marker
Lane 1: Vector medium
Lane 2: VEGF2 medium

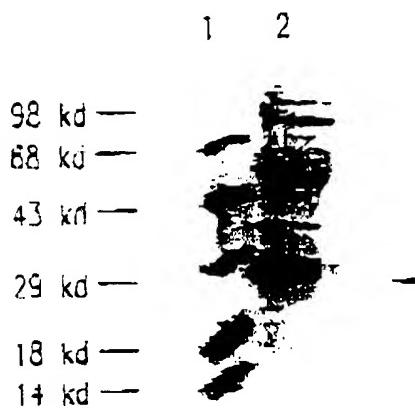
FIG. 8A



Lane M: Marker
Lane 1: vector cytoplasm
Lane 2: vector medium
Lane 3: VEGF2 cytoplasm
Lane 4: VEGF2 medium

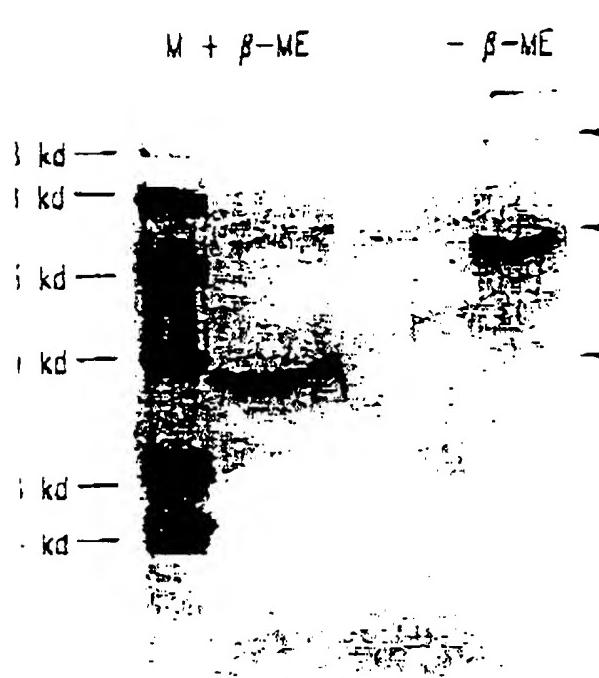
FIG. 8B

FIG. 9



Lane 1: Molecular weight marker
Lane 2: Precipitates containing VEGF2.

FIG. 10



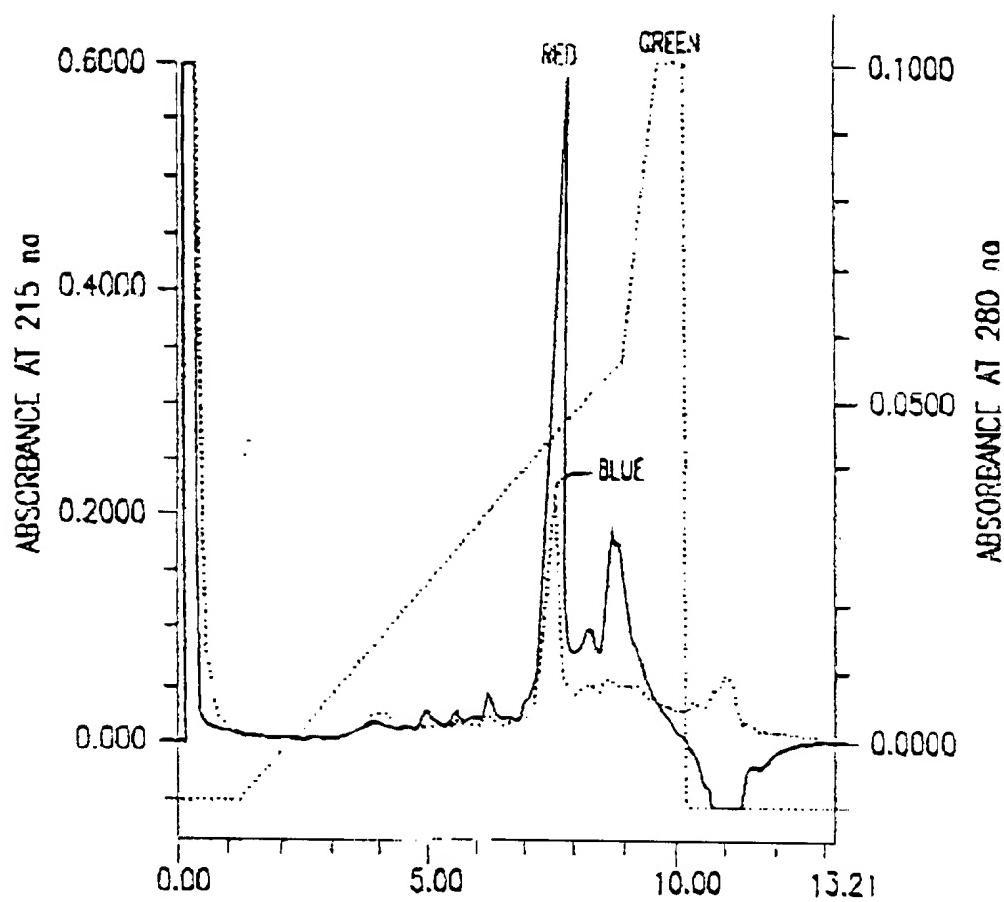


FIG. 11

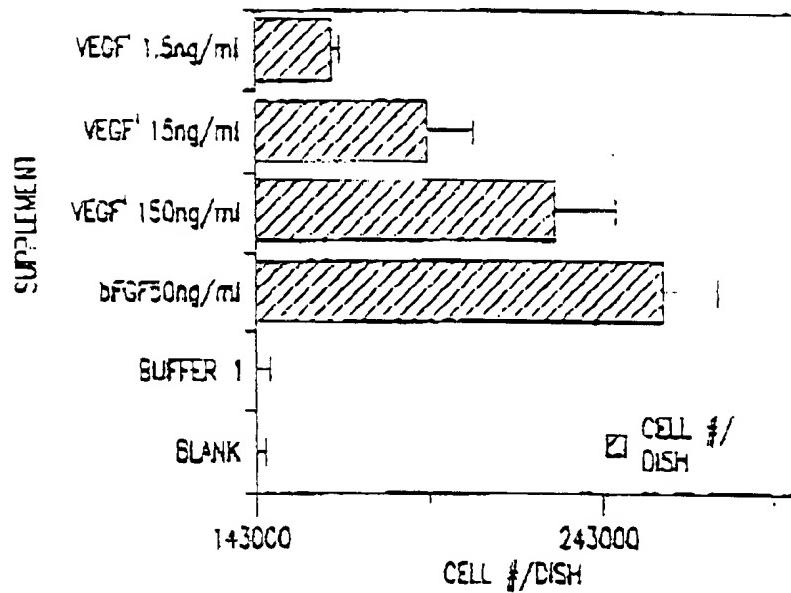


FIG. 12

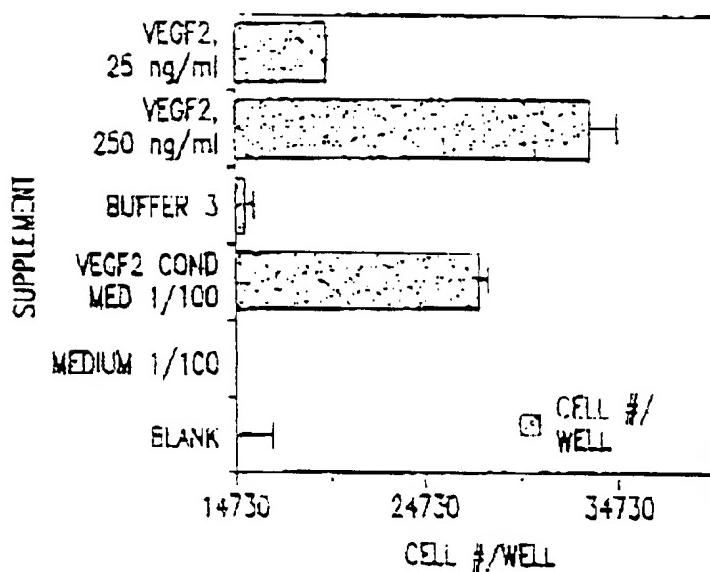


FIG. 13

21 / 68

1 fetal kidney
2 fetal lung
3 fetal liver
4 brain
5 kidney
6 lung
7 liver
8 spleen
9 thymus
10 bone marrow
11 testes
12 placenta
13 skeletal muscle



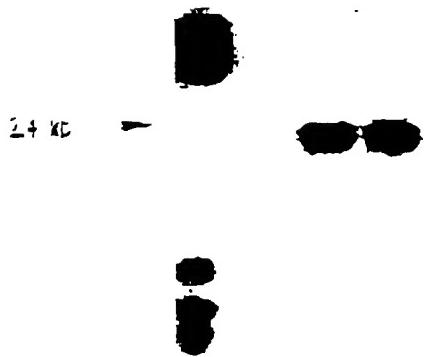
FIG. 14A

M 8 1 2 3 4 5 6 7 8 9 10 11 12 13



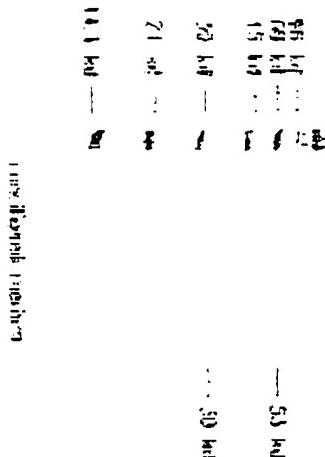
FIG. 14B

1 2 3 4 5 6



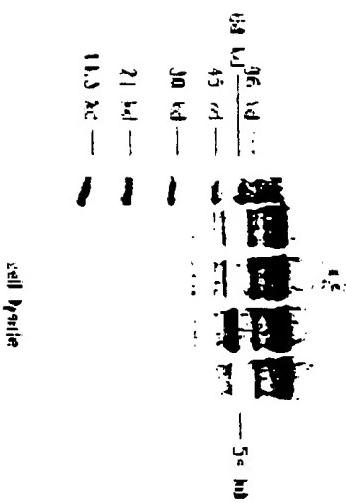
1. Molecular weight marker
2. Umbilical vein endothelial cells
3. Aortic smooth muscle cells
4. Dermal fibroblast

FIG. 15



1. Molecular weight marker
2. Blank
3. Control protein-HA
4. Vector control
5. VEGF2-HA

FIG. 16A



1. Molecular weight marker
2. Blank
3. Control protein-HA
4. VEGF2-HA
5. Vector control

FIG. 16B

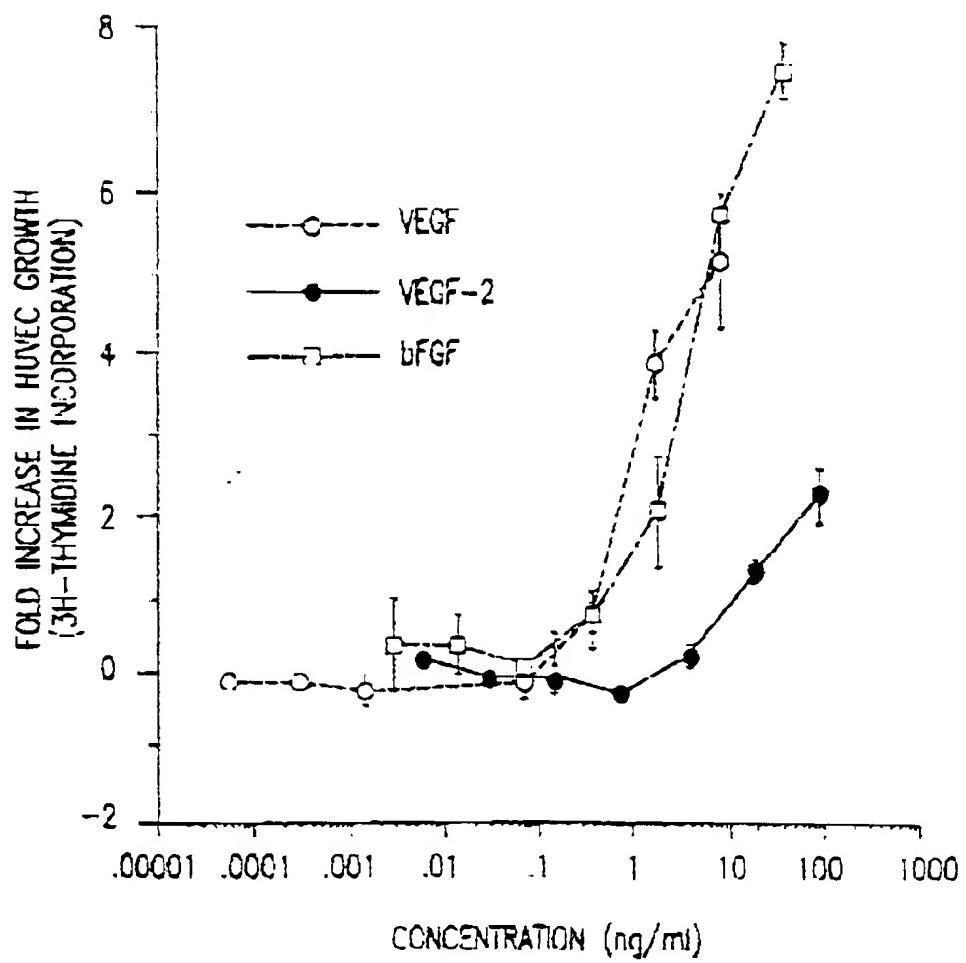


FIG. 17

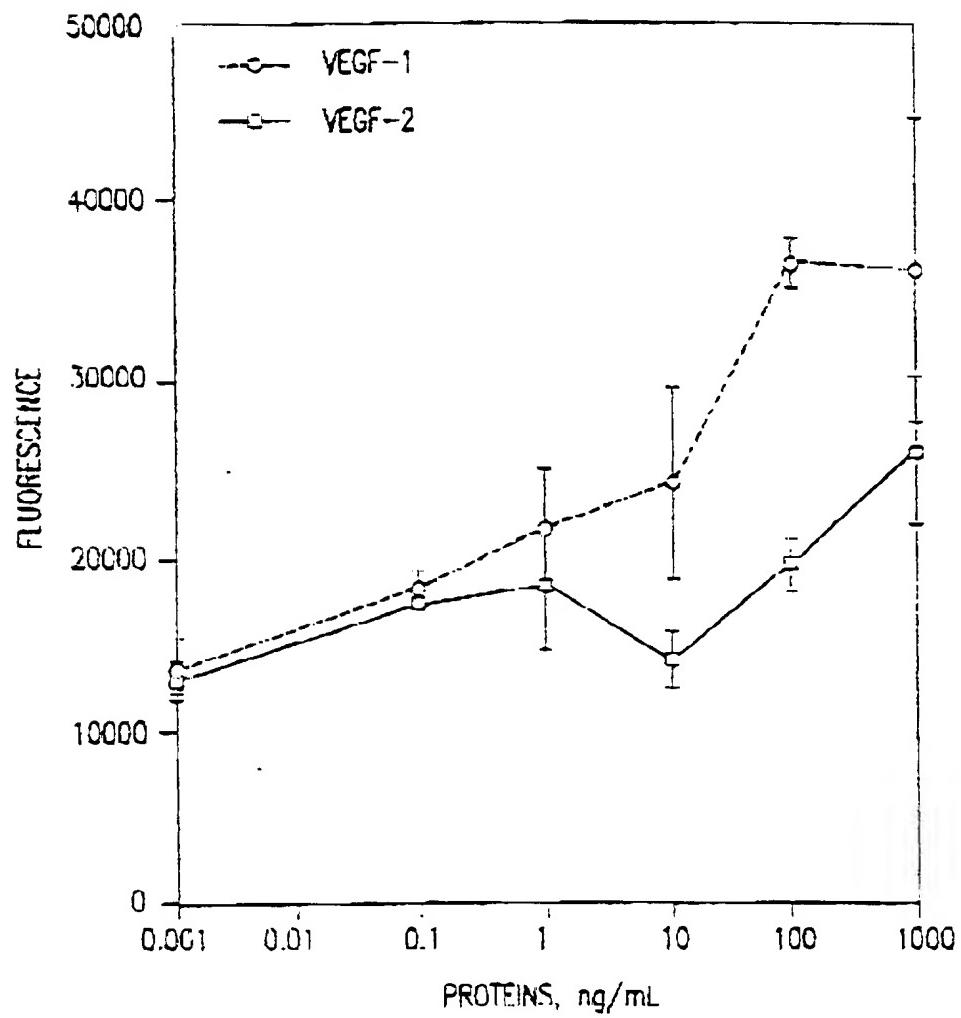


FIG. 18

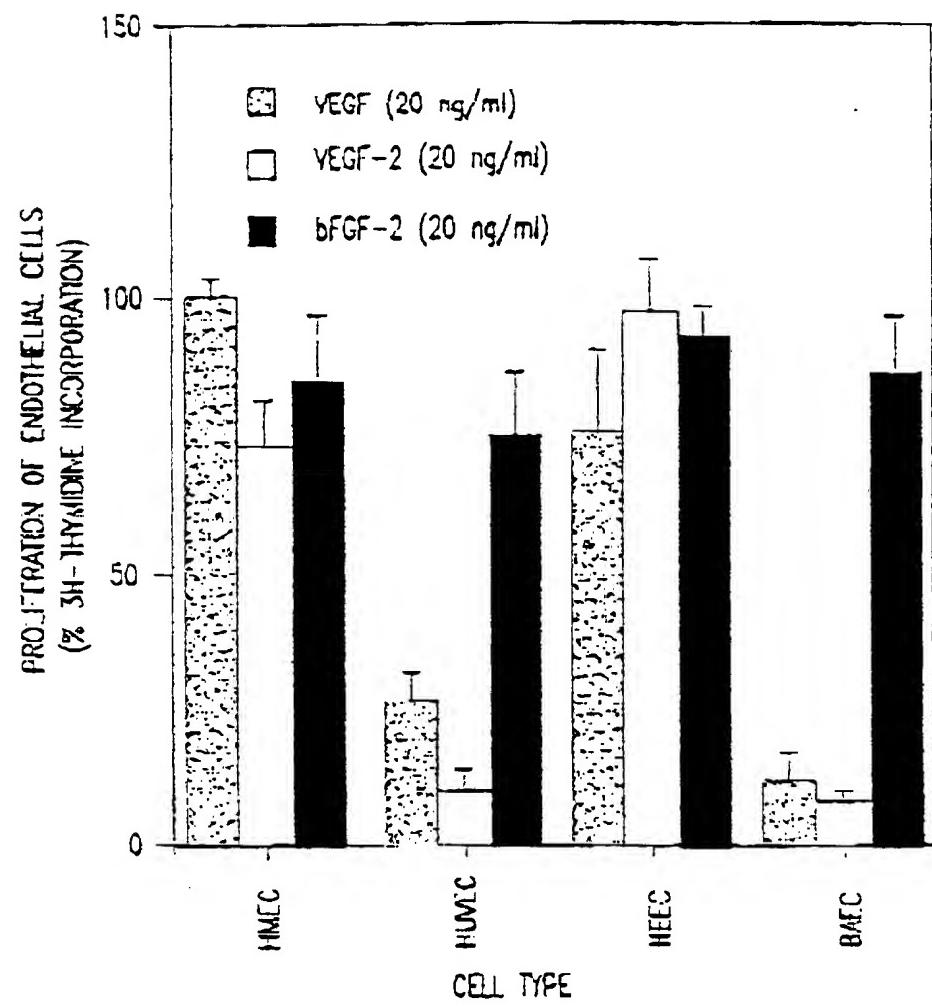


FIG. 19

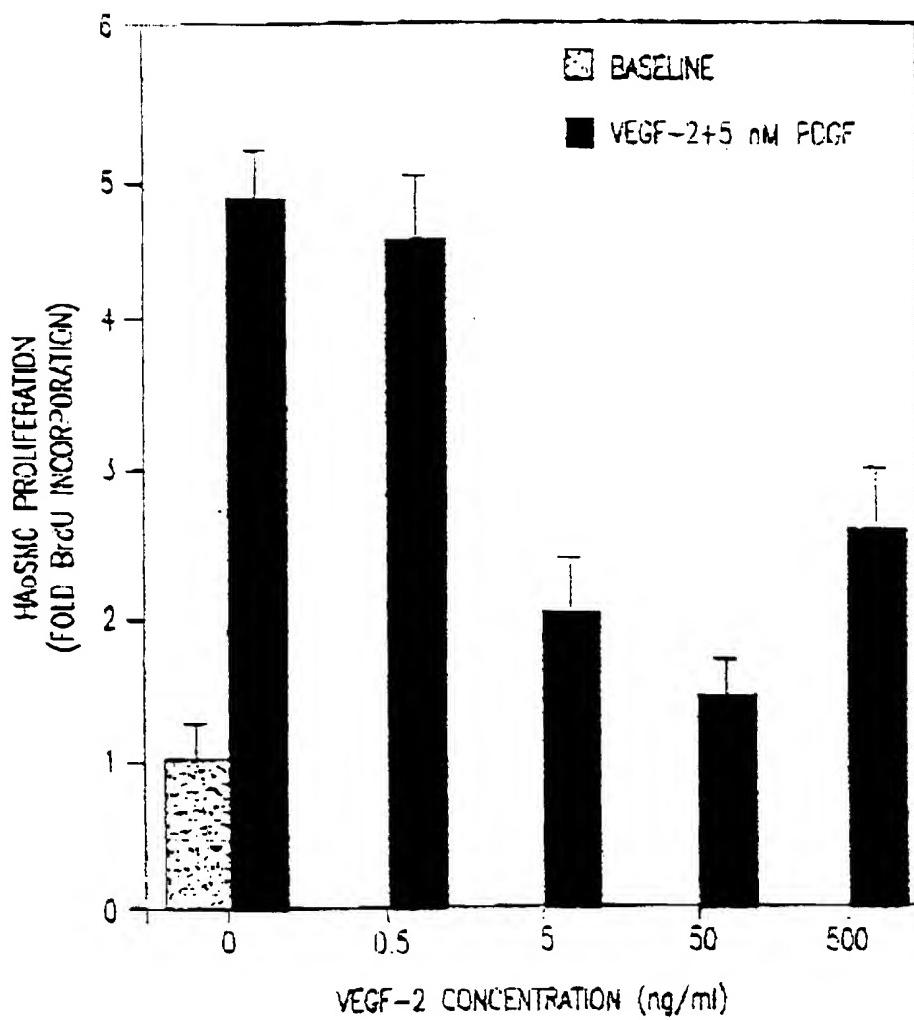


FIG. 20A

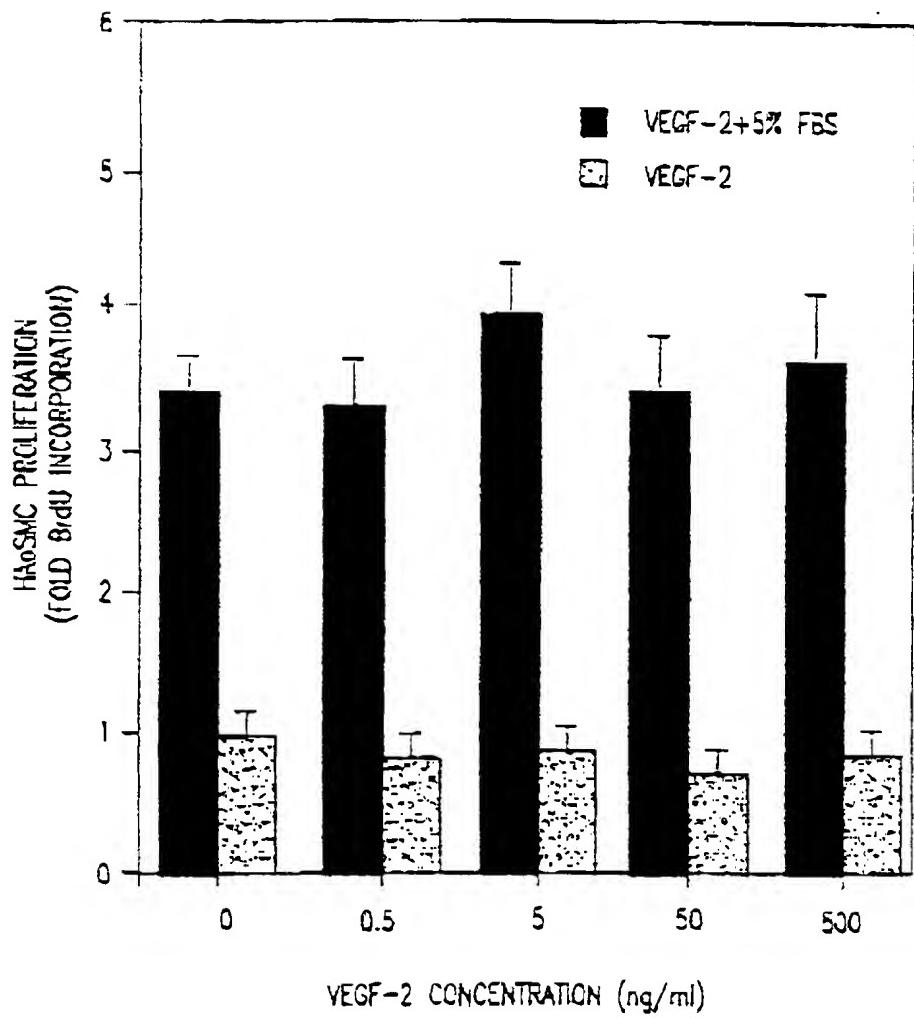
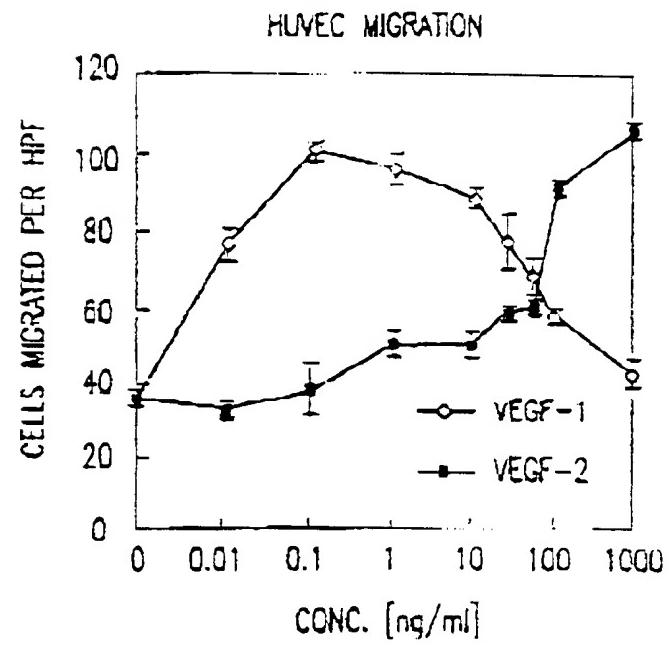
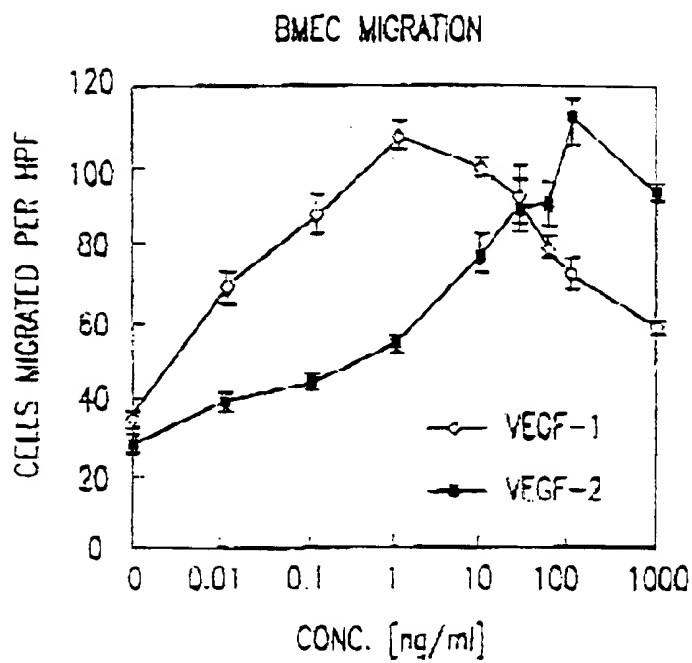


FIG. 20B

**FIG. 21A****FIG. 21B**

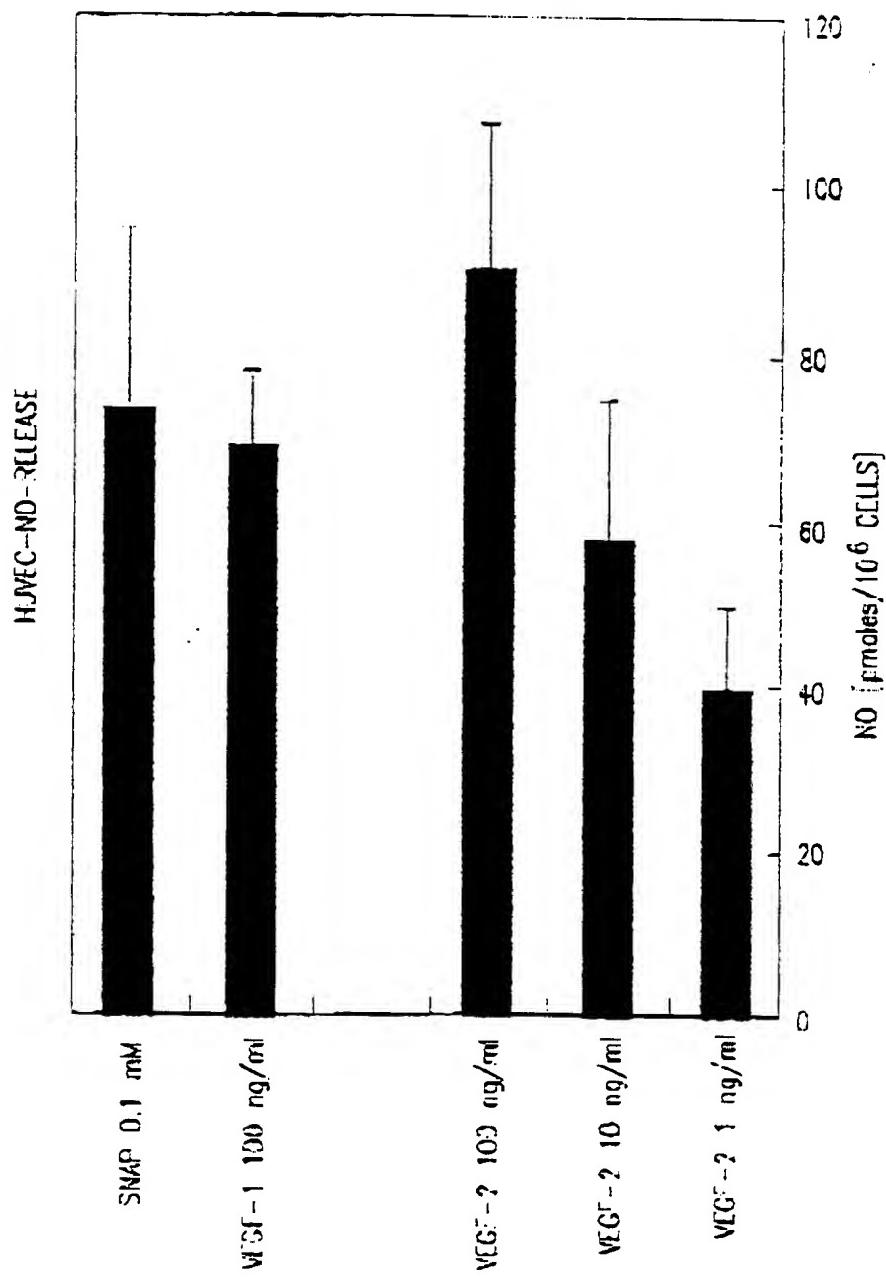


FIG. 22

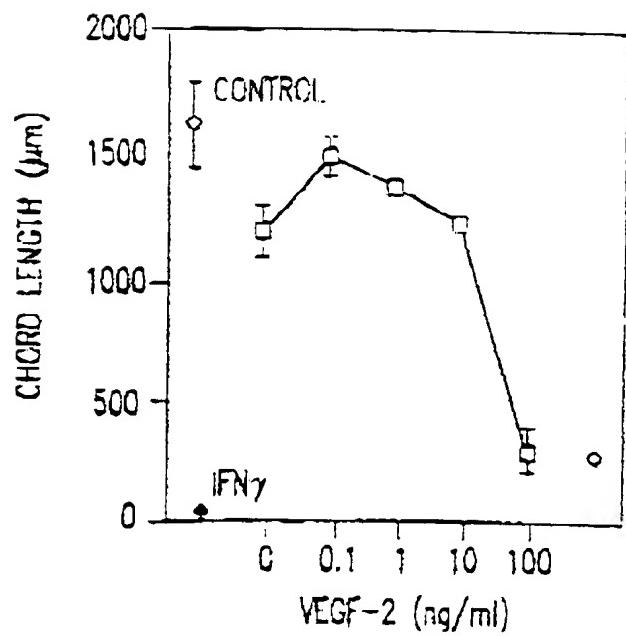


FIG. 23

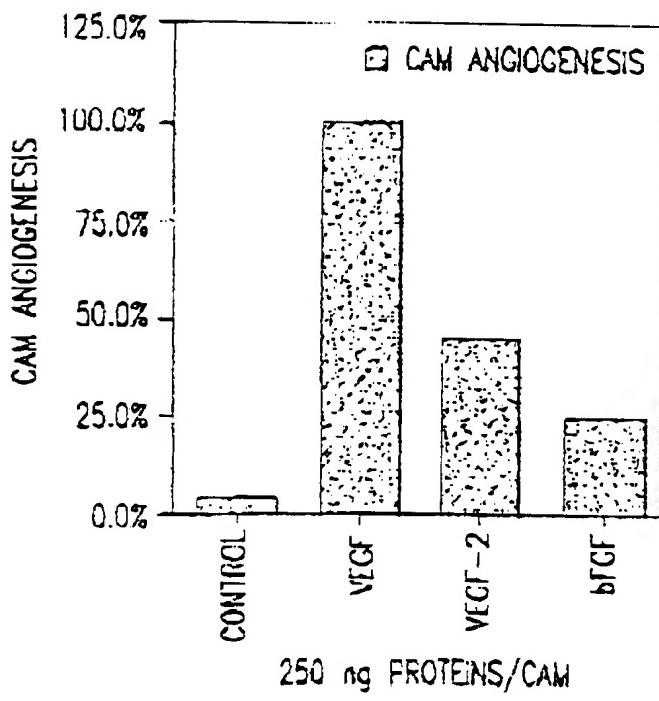


FIG. 24

CALF BLOOD PRESSURE RATIO
-PROTEIN I.A.-

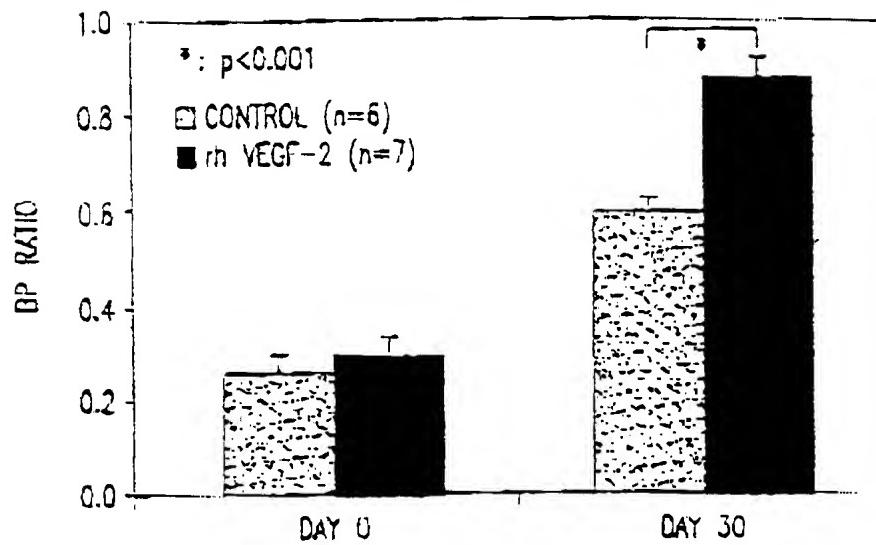


FIG. 25A

CALF BLOOD PRESSURE RATIO
-PLASMID-

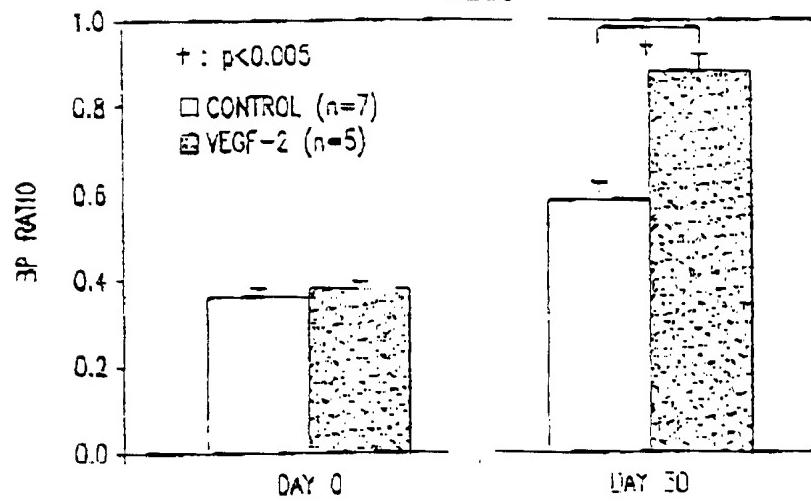


FIG. 25B

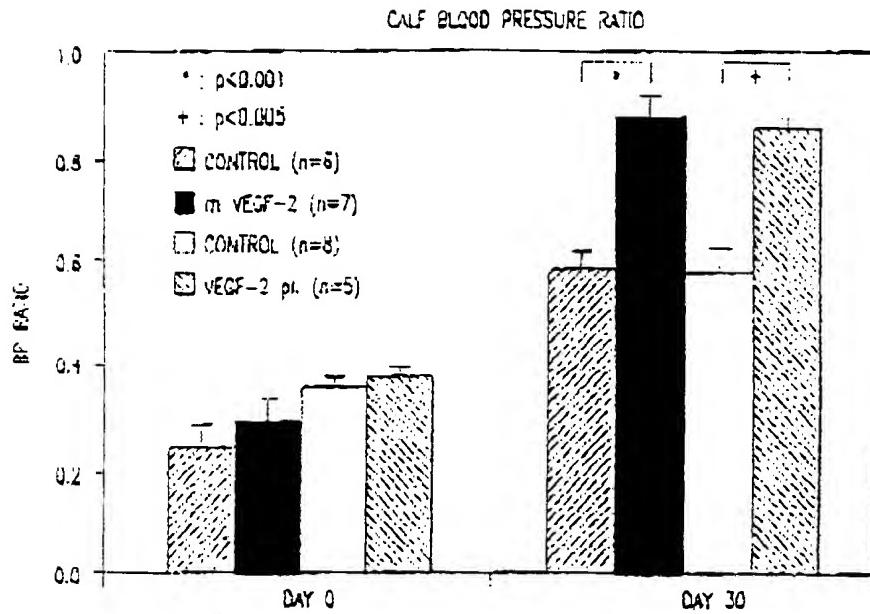


FIG. 25C

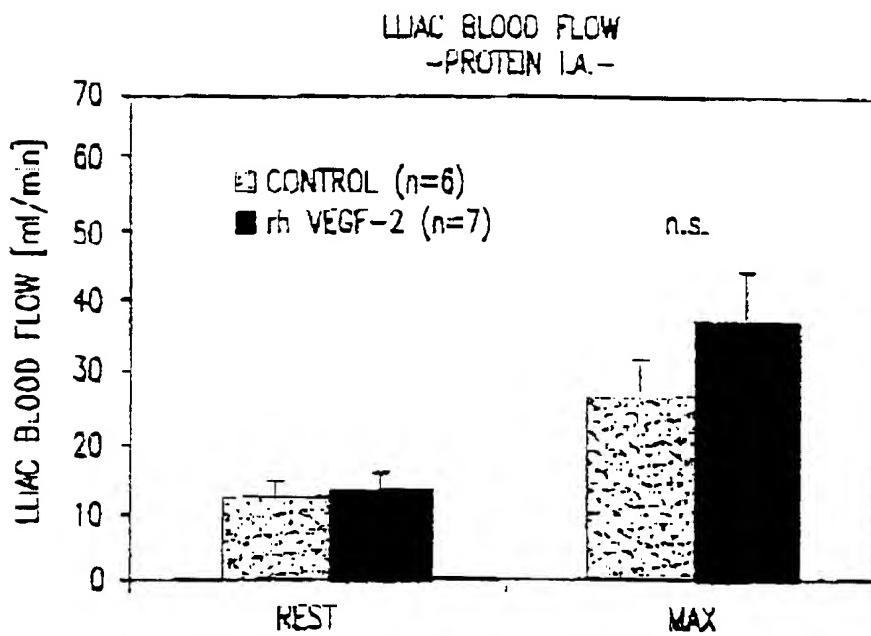


FIG. 25D

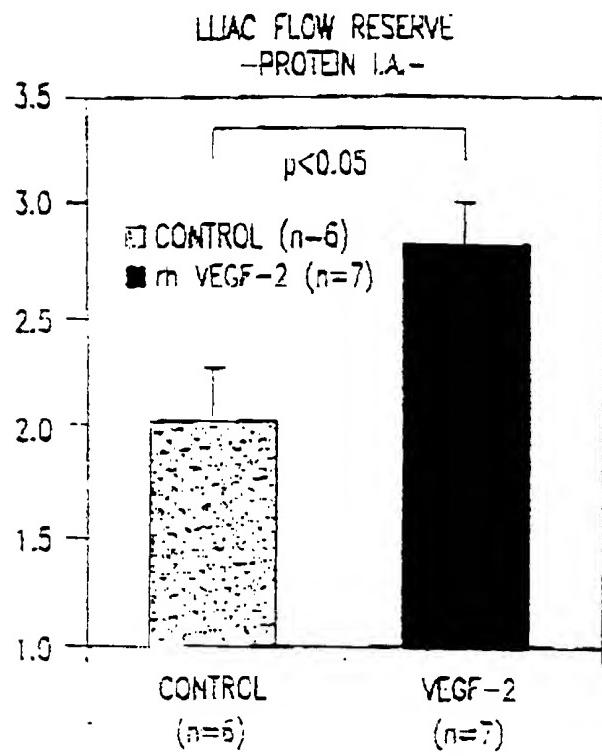


FIG. 25E

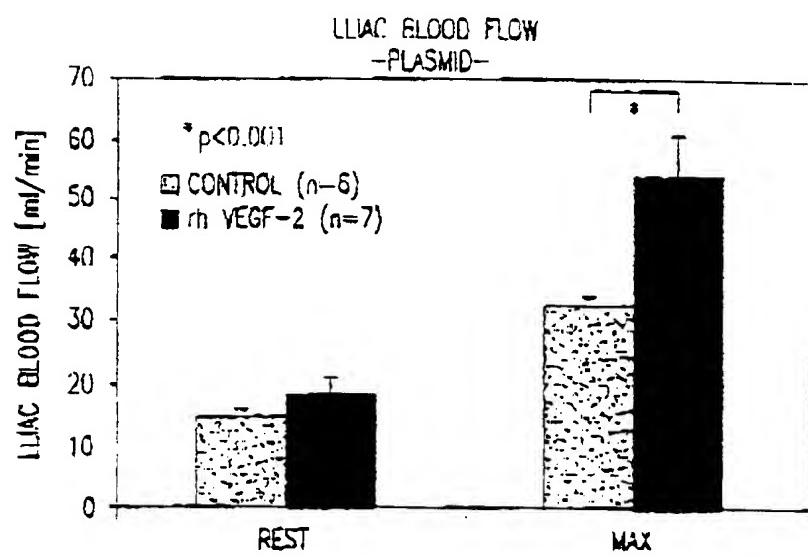


FIG. 25F

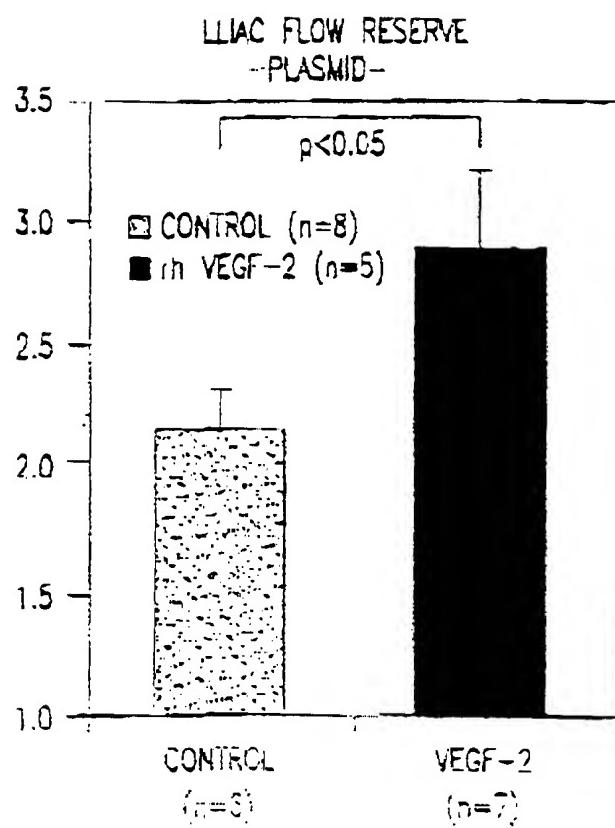


FIG. 25G

LLAC BLOOD FLOW

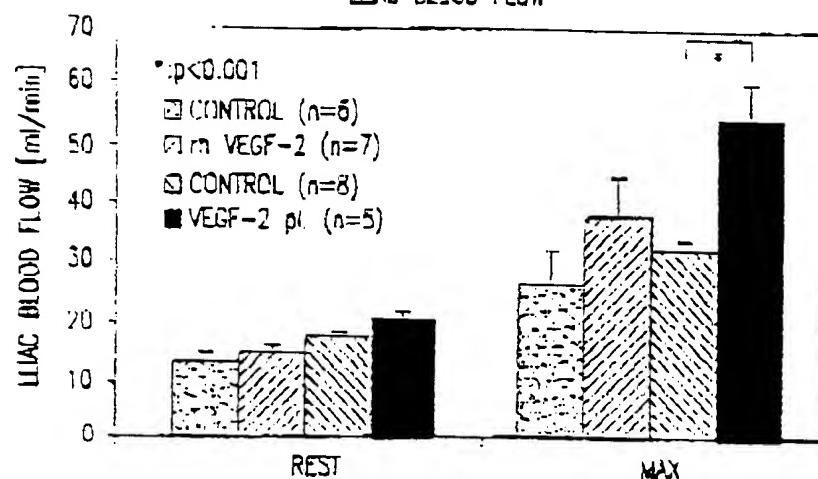


FIG. 25H

LLAC FLOW RESERVE

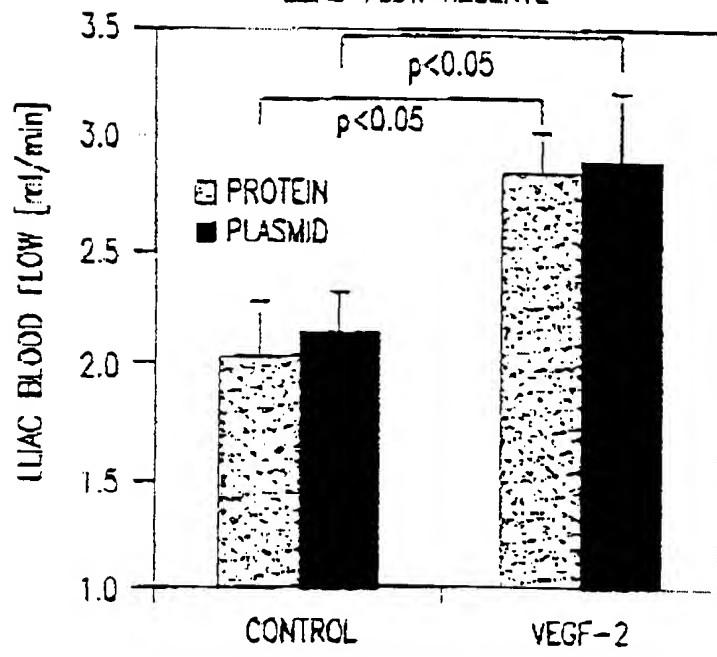


FIG. 25I

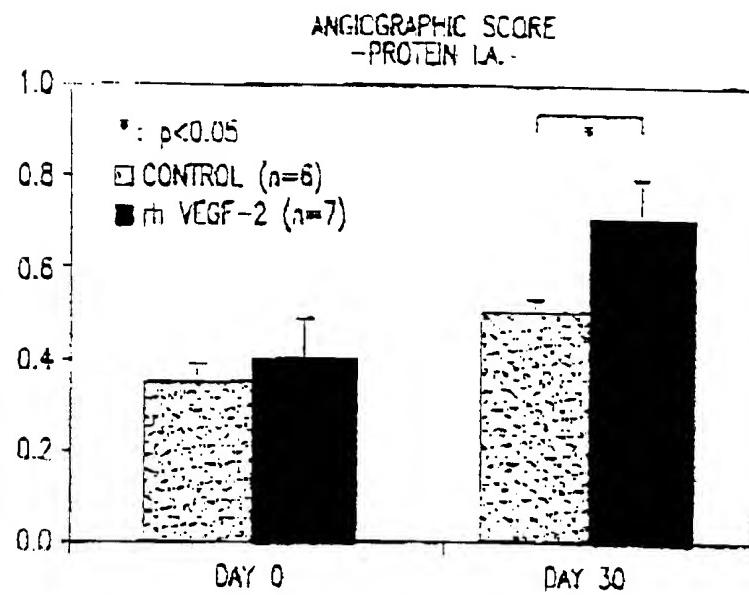


FIG. 25J

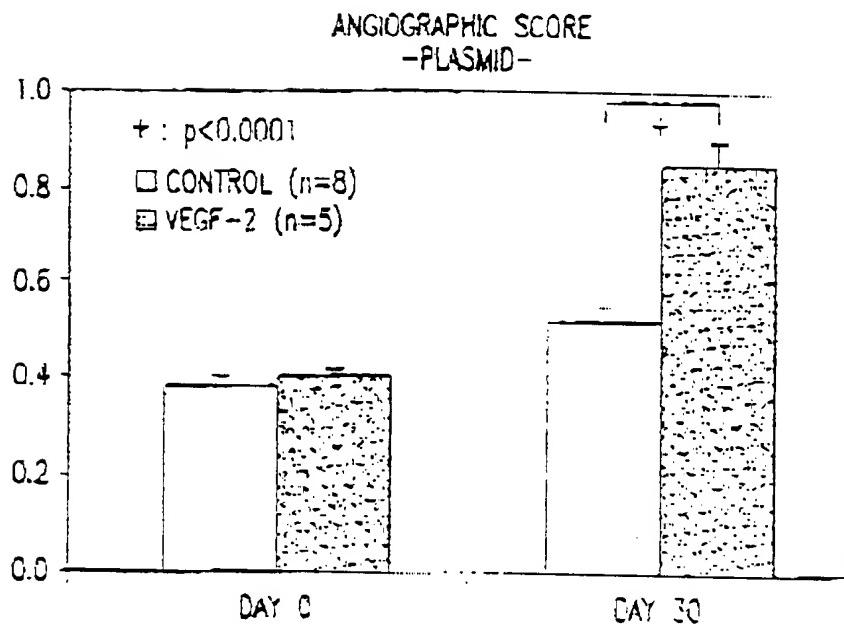


FIG. 25K

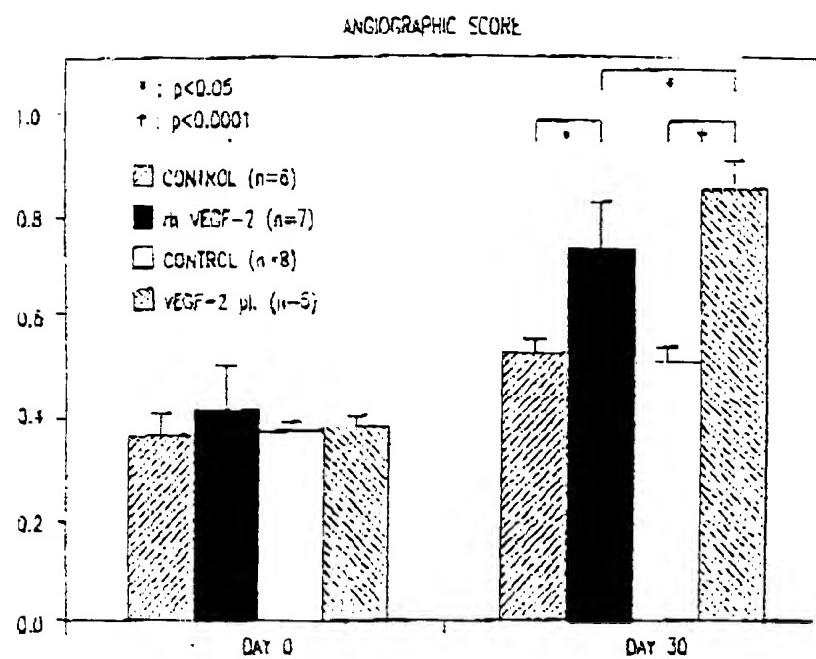


FIG. 25L

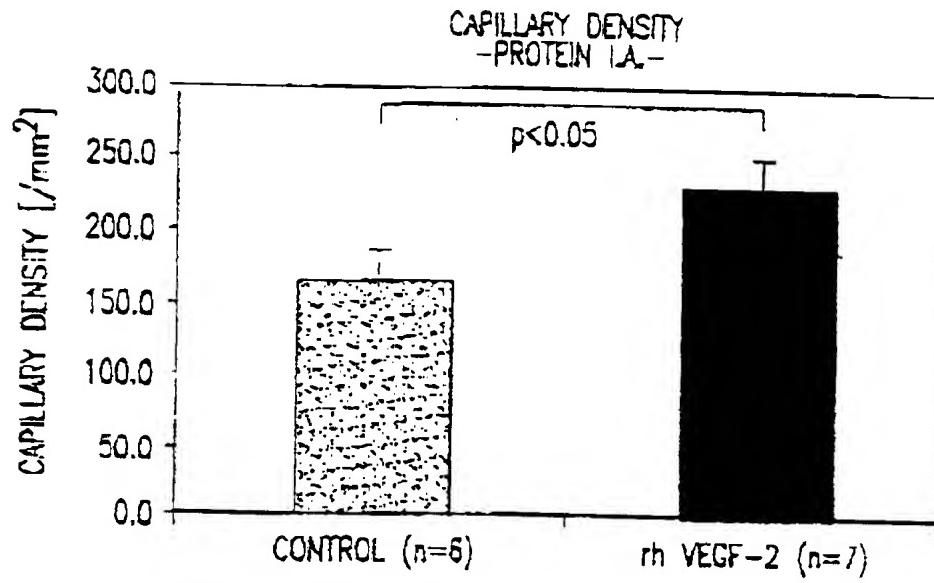


FIG. 25M

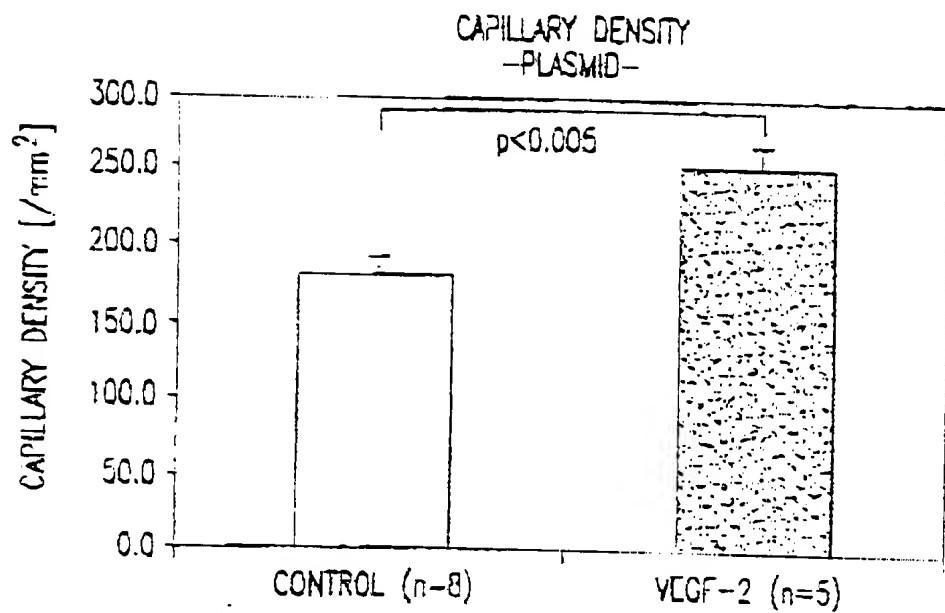


FIG. 25N

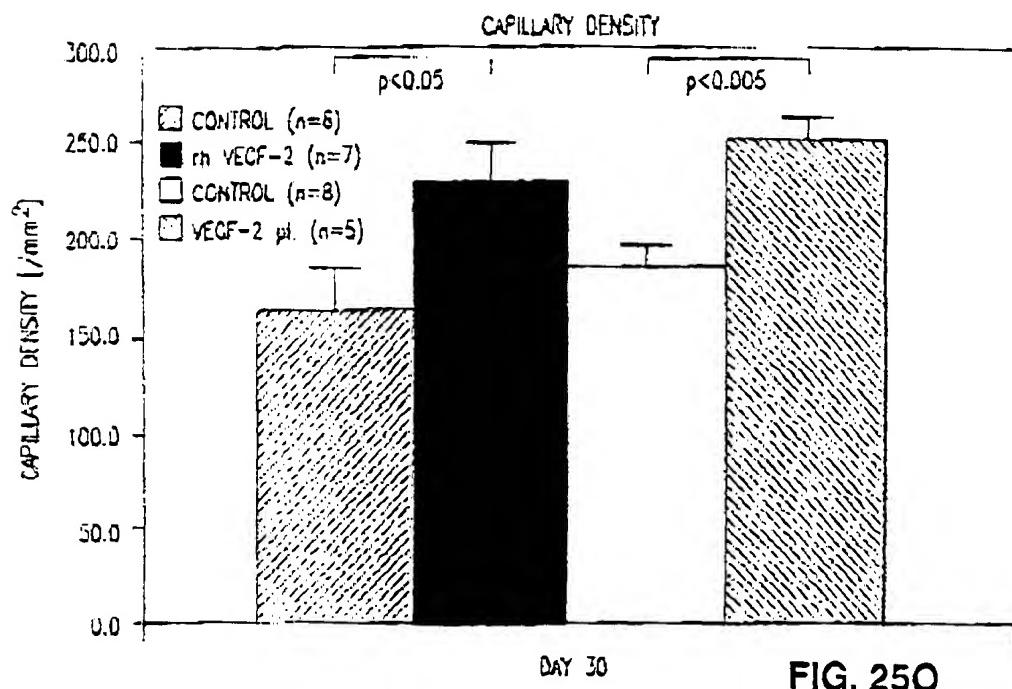


FIG. 25O

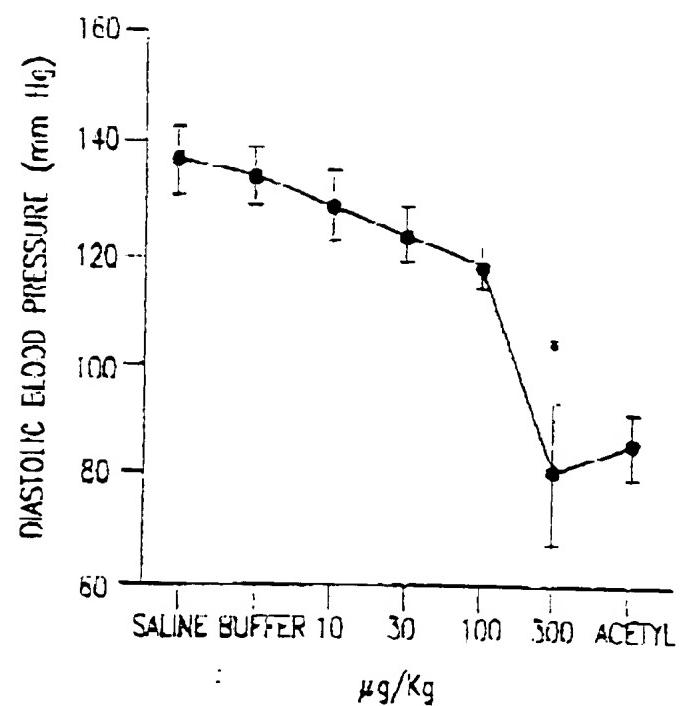


FIG. 26A

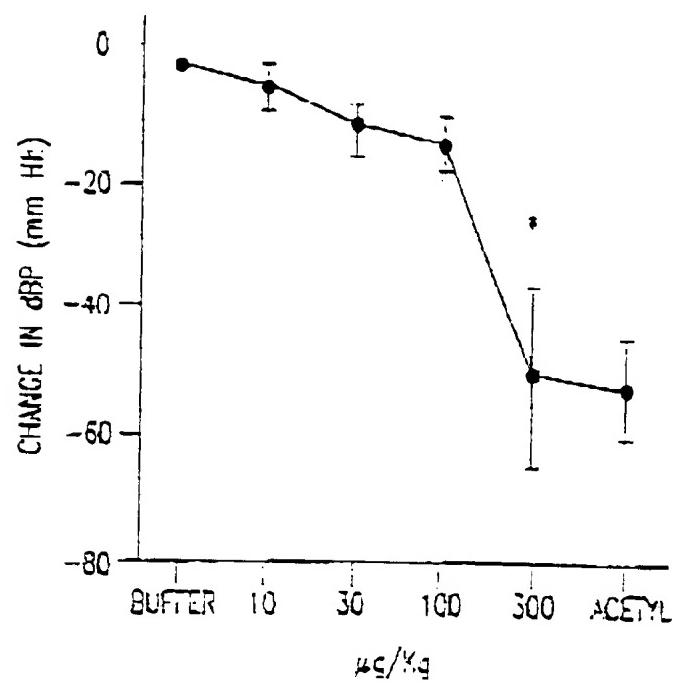


FIG. 26B

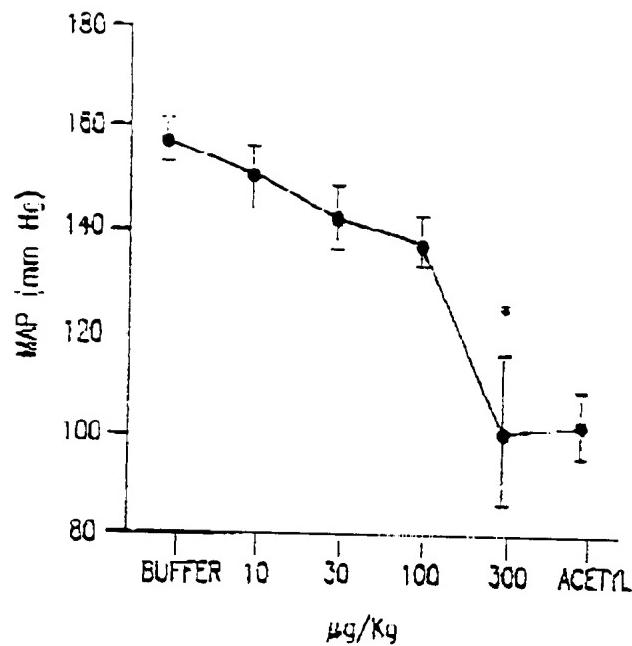


FIG. 26C

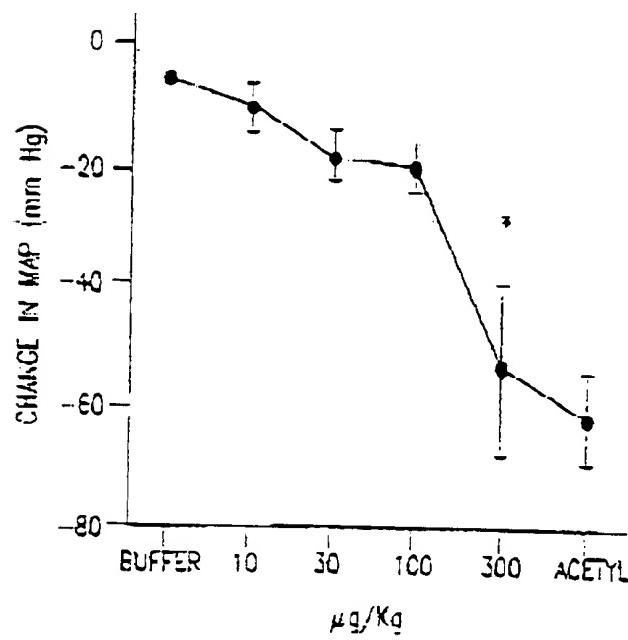


FIG. 26D

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CHANGE IN DIASTOLIC BLOOD PRESSURE OF SHR RATS GIVEN
INCREASING DOSES OF VEGF-2

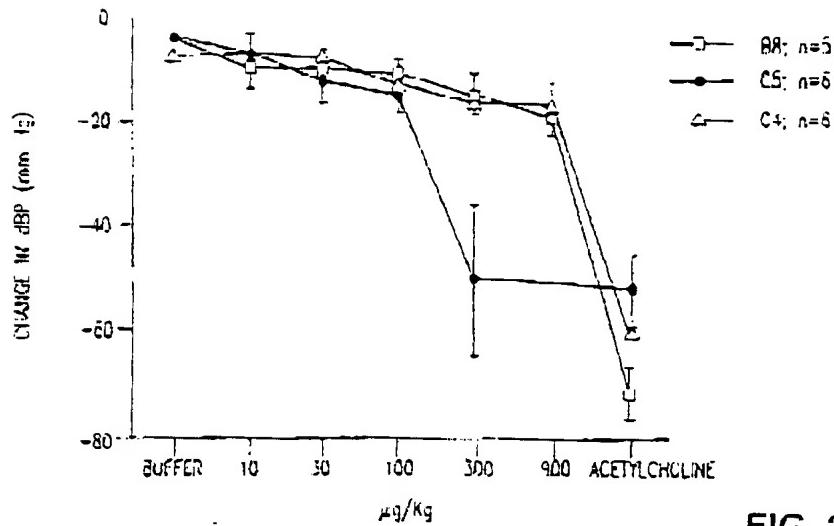


FIG. 26E

THE EFFECT OF INCREASING DOSES OF VEGF-2 ON THE
MEAN ARTERIAL PRESSURE (MAP) OF SHR RATS

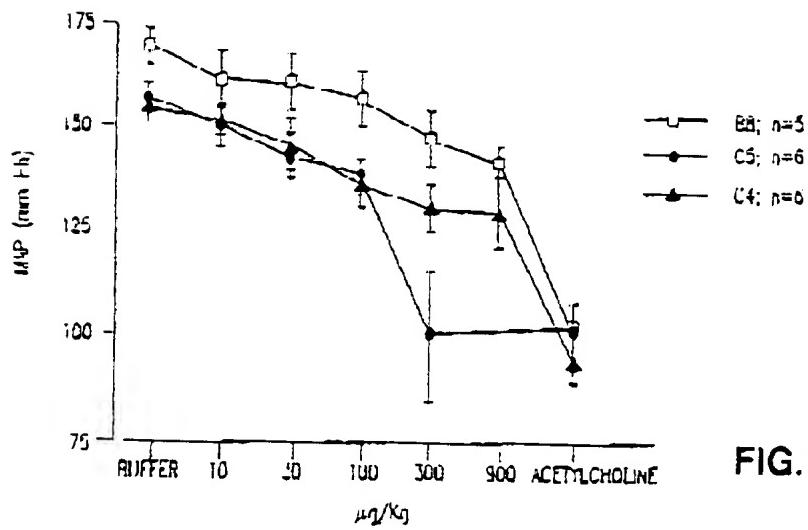


FIG. 26F

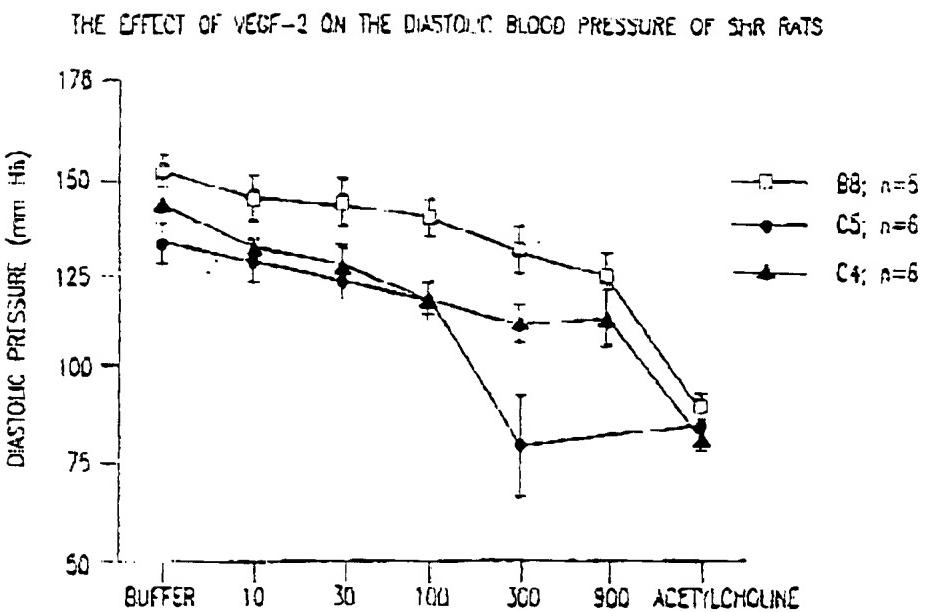


FIG. 26G

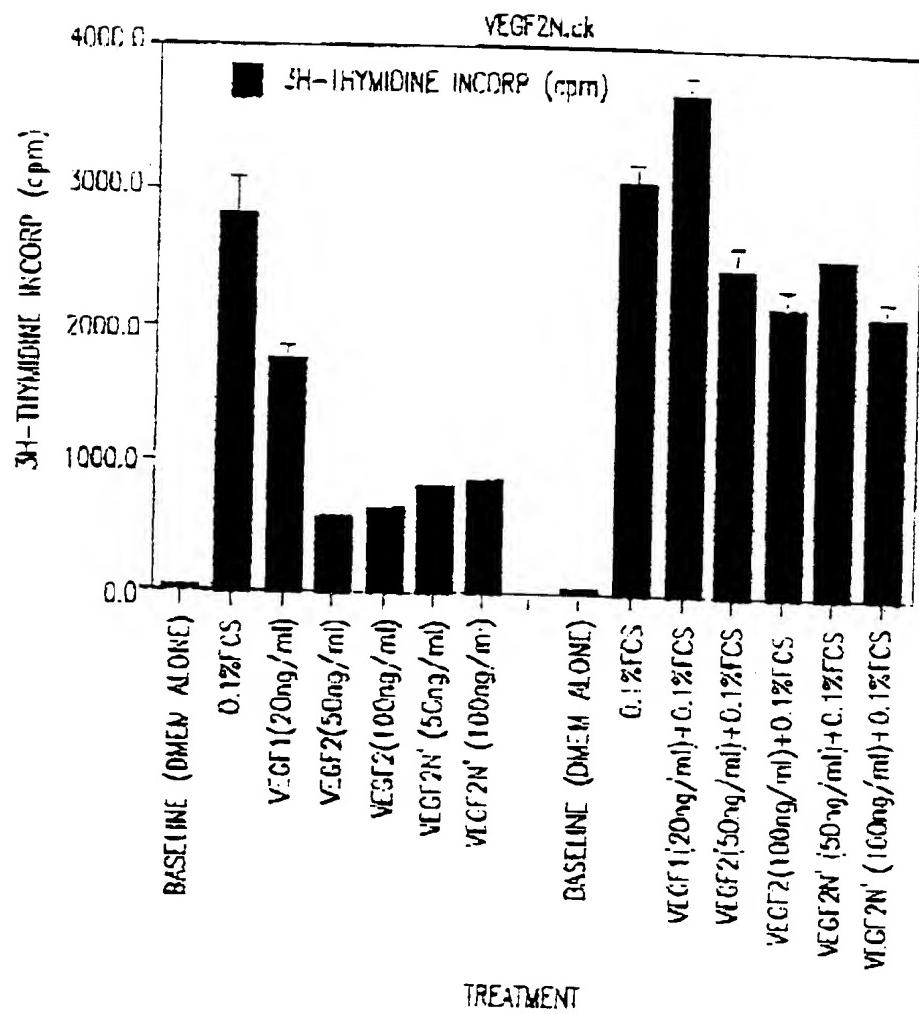


FIG. 27

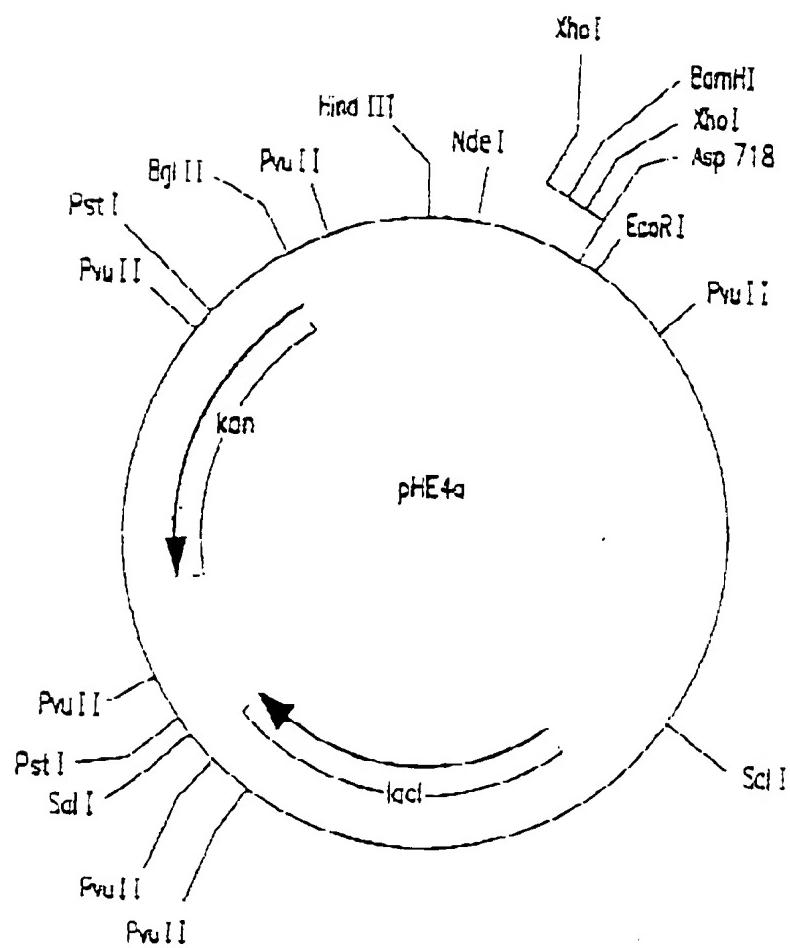


FIG. 28

OPERATOR 1
-35 [T T G A C T (T G T G A C T A C A A)]

OPERATOR 2
-10 [A A G A T] C T A C C C A (T C T C G G A T A C A A) T C A C A C T T - A A

S/D
W A G G G A G G A A T T A C A T A I C

FIG. 29

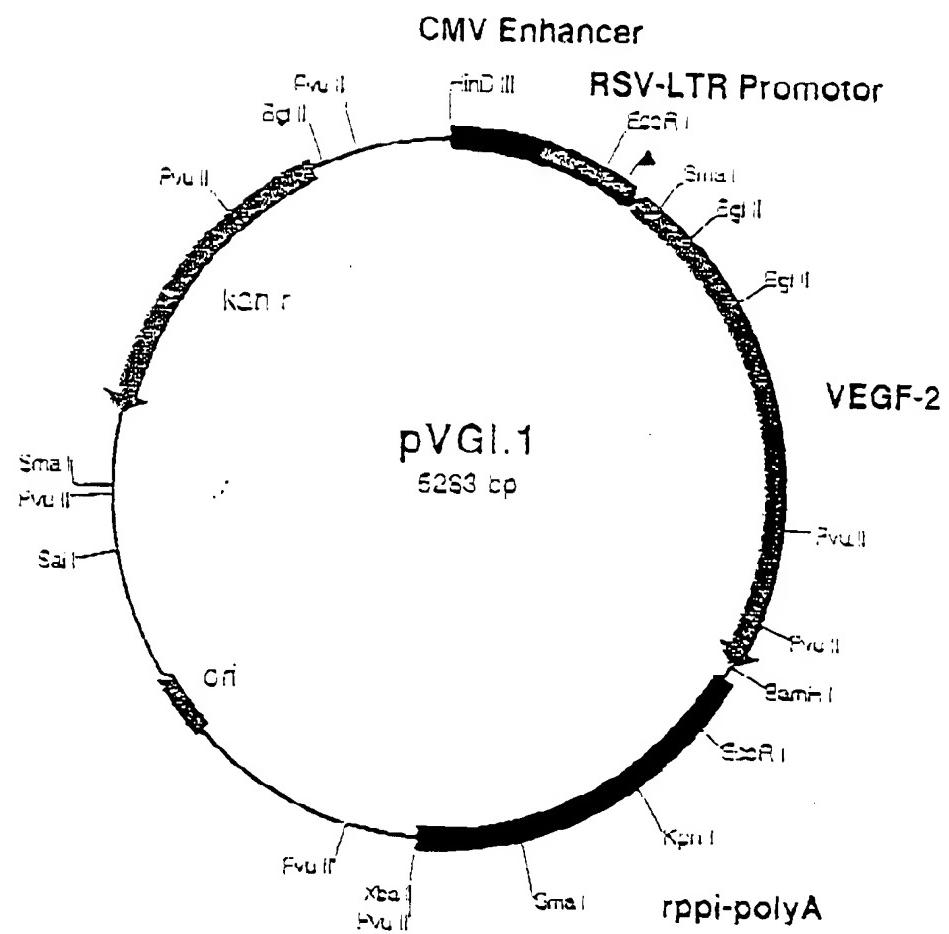


FIG. 30

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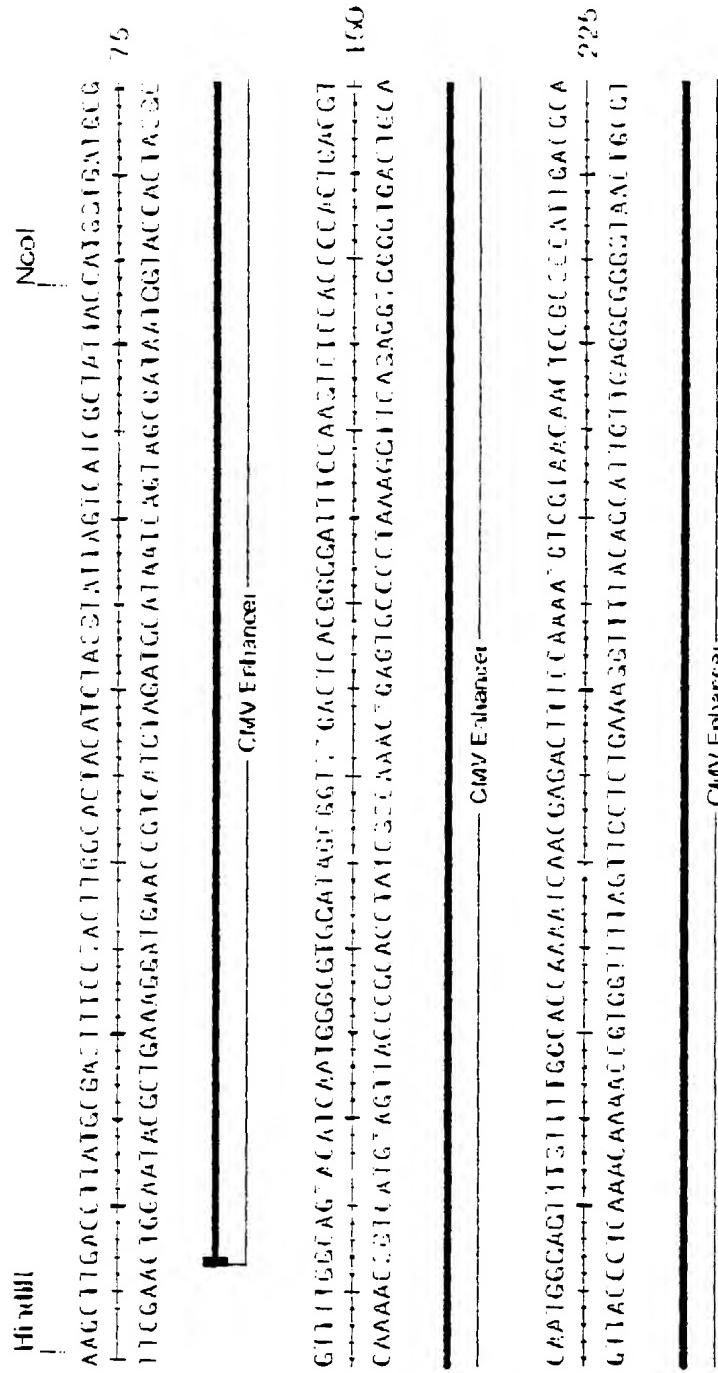


FIG.31A

RSV promoter
 RSV enhancer
 RSV T-IR Promoter
 RSV T-IR Promoter
 RSV T-IR Promoter

FIG.31B

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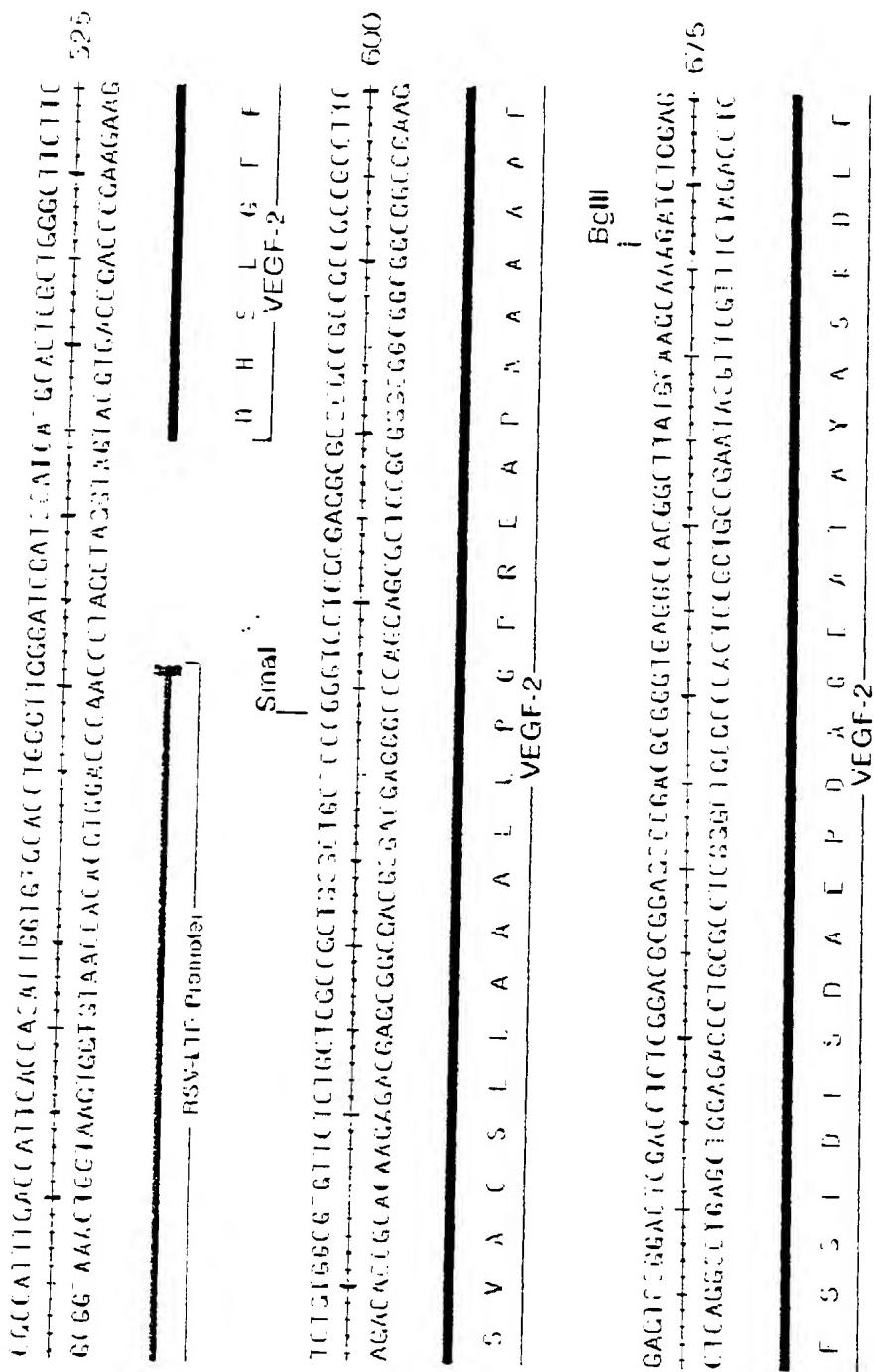


FIG. 31C

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FIG.31D

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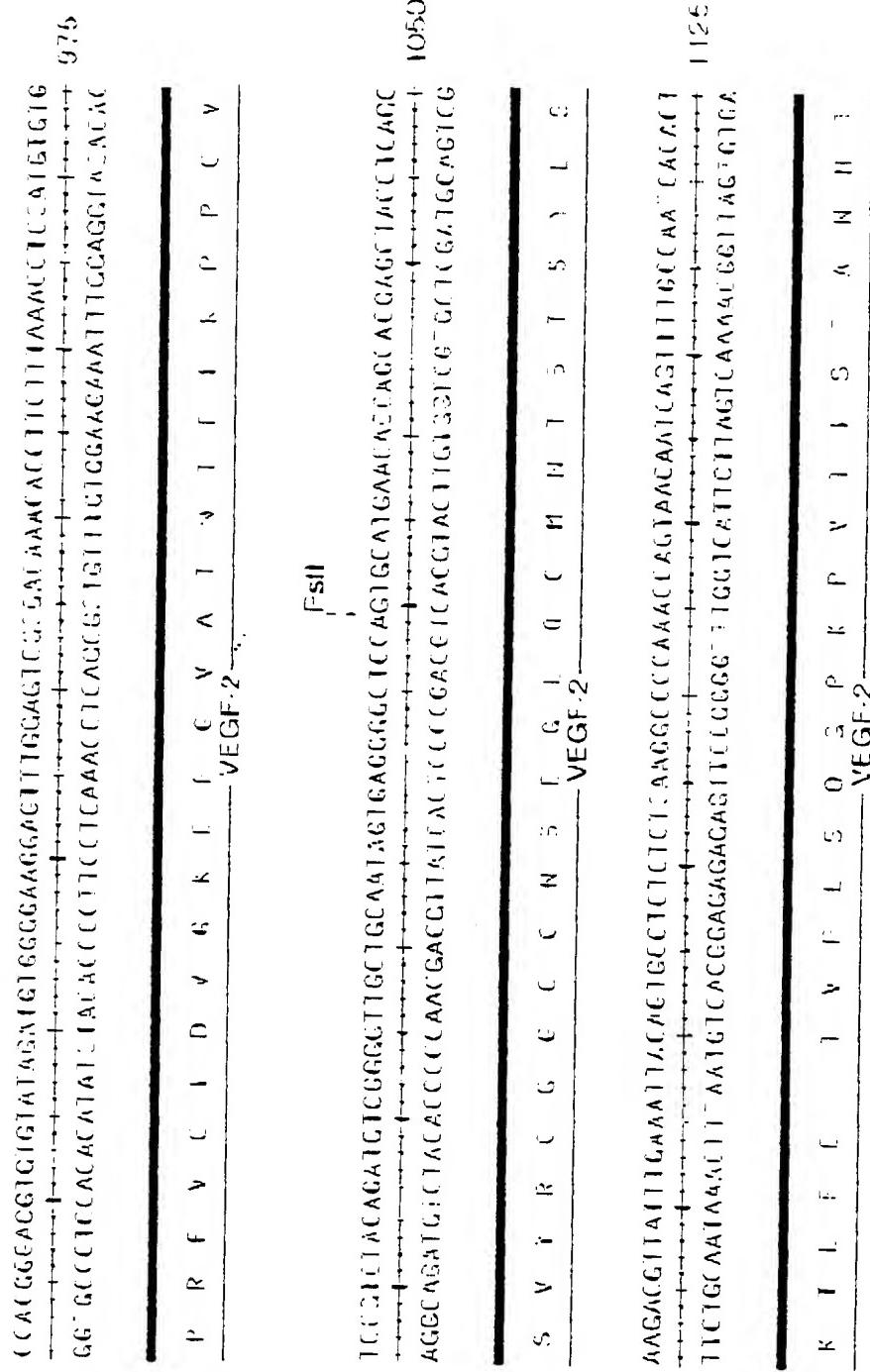


FIG.31E

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S. C. KRICKER AND R. S. VEGGFAR

二三

PROGRESSIVE ENVELOPE

FIG. 31 F

FIG. 31G

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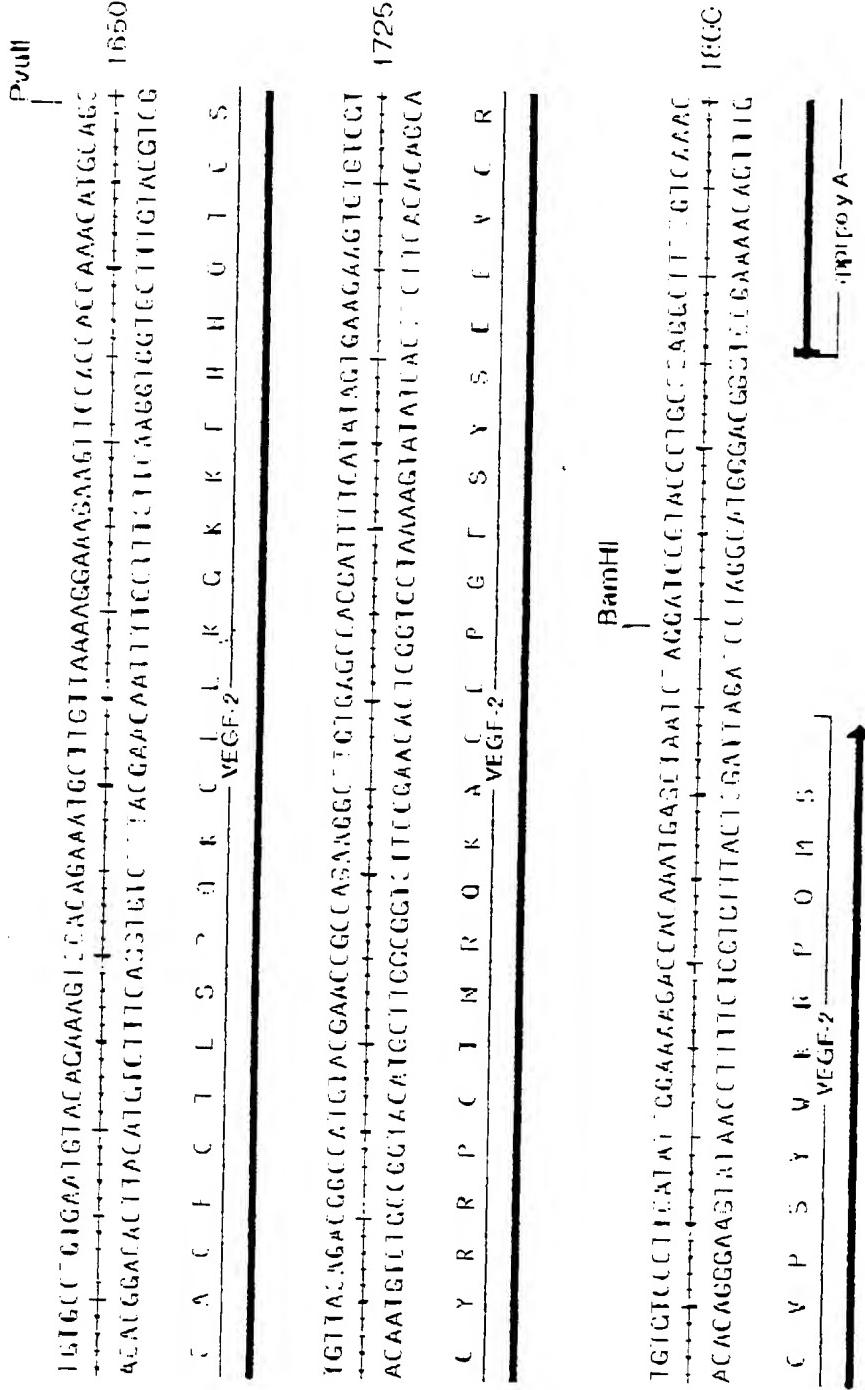


FIG. 31H

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AGCCAT-TTTG-GGTCTACTGGGAGTCCTACCCGTCGGGACTGCGAT-TTCTCGCACTCCA
TGTGCAAAATACCAAGAGAACCCATTGAGAGAAGCTTACCCATTAAGAACGTCGTCGGG
1875

TCCTCCGTTGAAAG GCGGGGCCCCACCAAGGTTAGGTCGAGGTCGCTGGCTCCATGCTTACCTCTC
ACAGGGGGGGTTTTCATCCCTCCGGGTTCCATTGAGACGAGGCTTAAAGAAGGGCTTACGATTCAGGGCA

appi poly A

FIG. 311

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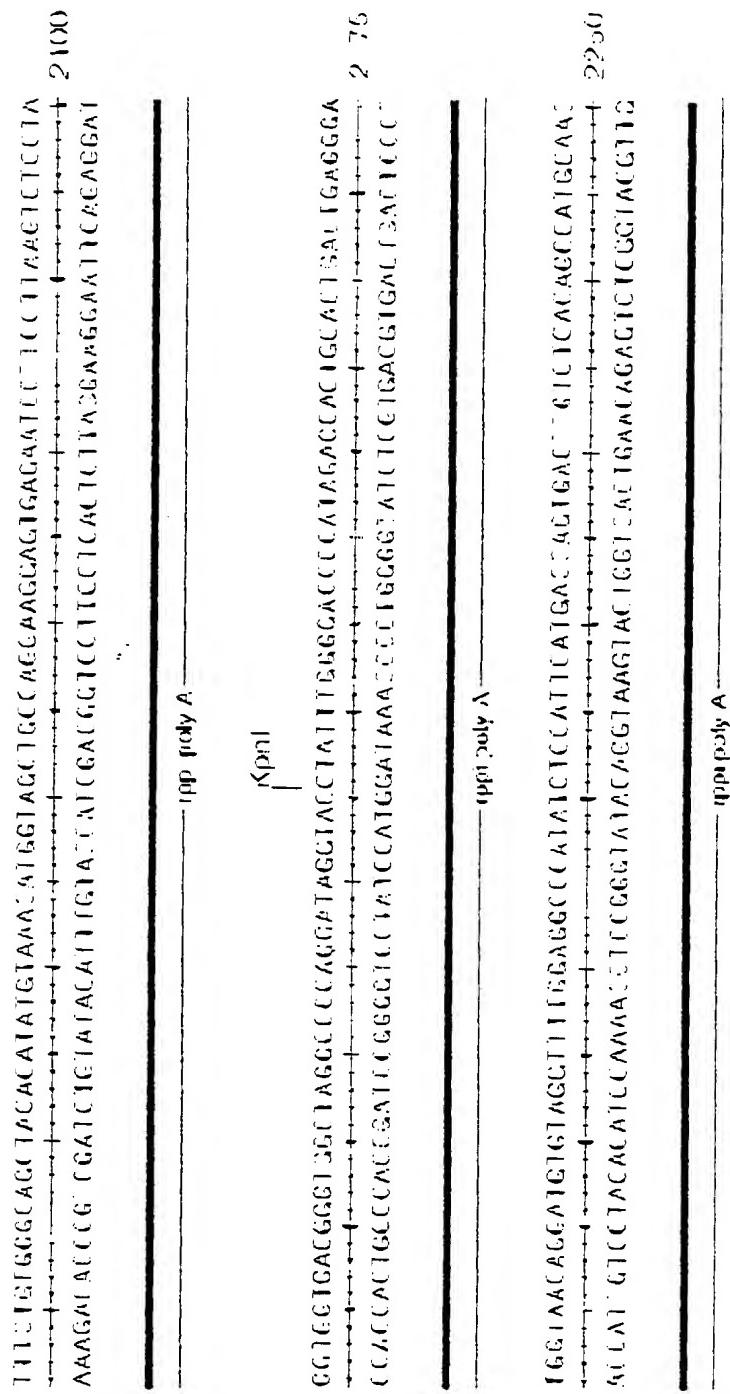


FIG. 31J

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CGTGGCTGCGCCGATGCCGAAAGTGACACAAACCCGGGTAAATCAGGGGCTTGGCTT
GGAAATGGAGGAAACGGCGATCGATCCGATTCACCTCTTCGGACCCGATCTTACCTCCGAGCTGACCS
2325

— PROVA A —

-161 poly A

Srial

2475
GAGTCATAC TGGATGGCTGGGGAGGCCGGGGAGGAACTTGGACCTTGGACCTTGGCGTG
GGTTCGGCTGGGCACTCCGGGCGGTGAACTTGAAGCTGGGCACTGGGCGGTGAACTTGG

A polka party

A polyimide

FIG. 31K

GCCCTACCCCTGCAACCCCTTCCAAAGAACATTTAAGA GTCAGC
 CGGGTGATGAACTGGGAGACGTTTAACTTGGGAAGCTTCTTCATG
 2626
 poly A

GTCCTGTCTATGCGGCCGAGAGGAGGAGGAGGAGGAGGAGGAGG
 CACCCACCCACCCACCCACCCACCCACCCACCCACCCACCCAC
 2700
 poly A

GCTCTAGCCGAACTGCGTAACTGCTGCGAAATTCCTTCACAAAC
 CGACCGAACCTGGAACTGAACTGGAACTGAACTGGAACTGAACT
 2776
 poly A

Punctual

TCAAGCCGAACTAAAGGAGGAAAGCTGGCTGCTTAATGAGTCAG
 GTCCT
 2850
 poly A

FIG.31L

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FIG. 31 M

| | | |
|---|---|---|
| GGAAAGGACCTTCCATGCCCTCTTGCGGAAACCCGACCAAGCTGAGCCTGAA CTTGTAGGAGGCACCTTGGGAGGAGCTGGGACGGGCAAGGGCCAAAGGAGGAA 3300 | GGAAAGGACCTTCCATGCCCTCTTGCGGAAACCCGACCAAGCTGAGCCTGAA CTTGTAGGAGGCACCTTGGGAGGAGCTGGGACGGGCAAGGGCCAAAGGAGGAA 3375 | GGAAAGGACCTTCCATGCCCTCTTGCGGAAACCCGACCAAGCTGAGCCTGAA CTTGTAGGAGGCACCTTGGGAGGAGCTGGGACGGGCAAGGGCCAAAGGAGGAA 3450 |
| CTTGTAGGAGGCACCTTGGGAGGAGCTGGGACGGGCAAGGGCCAAAGGAGGAA 3525 | CTTGTAGGAGGCACCTTGGGAGGAGCTGGGACGGGCAAGGGCCAAAGGAGGAA 3525 | CTTGTAGGAGGCACCTTGGGAGGAGCTGGGACGGGCAAGGGCCAAAGGAGGAA 3525 |
| CTTGTAGGAGGCACCTTGGGAGGAGCTGGGACGGGCAAGGGCCAAAGGAGGAA 3590 | CTTGTAGGAGGCACCTTGGGAGGAGCTGGGACGGGCAAGGGCCAAAGGAGGAA 3590 | CTTGTAGGAGGCACCTTGGGAGGAGCTGGGACGGGCAAGGGCCAAAGGAGGAA 3590 |
| CTTGTAGGAGGCACCTTGGGAGGAGCTGGGACGGGCAAGGGCCAAAGGAGGAA 3665 | CTTGTAGGAGGCACCTTGGGAGGAGCTGGGACGGGCAAGGGCCAAAGGAGGAA 3665 | CTTGTAGGAGGCACCTTGGGAGGAGCTGGGACGGGCAAGGGCCAAAGGAGGAA 3665 |

FIG.31N

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ACCCCTGAAAACACTTGGCTTGCTGATGGCGAACACCGGGTGGGAGGCTGGTTCCTGGCT
TGGAACTTTTCTAACCATGGAGACCTGGCTTGGCTGGCTGGGACCACTGGCTTAAAGAACTGGCT 3675

3750
AAGCTTAACTGGAGAGGAACTTCAAGAAGTCCTAGACCTTTAGGCGCTGAC
TGCGCTTAACTGGCTTTCAGATCTCTAGAAACTGAAAGATGCCAGAGGACTC

Sall

FIG.310

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PstI
 CCCAGTCGGGATGGAACTGCCATGGTTCGAGATGCCAATGGAC
 AGGAGCTAACGCCCCAACCTTGCGGACCCAGGACTTATGGCTGGCT
 3900

Pvull
 TAGAAUUCGGAGGUGGCCAGCTCAGGAGGAGCTGAAACCCCACCTGGAGGGCAUTGAGGCGGGCC
 ATCTGGAGGUCGCGAGAGCGCTGACTTGGTGAECGCTTCCCTTAACTTGGCTCCCTCC
 3975

SmaI
 AACACCCAGGATGAGAATCCCAGGATCATTTACCCGGGCTCCCAAAACGAACTTGGAGCTAAC
 TCTGGGGCTGAACTCAAGGGGGGCTCTAGTAACTTGGCTGGGGCTTGGCTTAACTTGGCTTGG
 4050

CTTCTAATGAAAGGGGGGCGGAAATGGAAATGGAAATGCTGGGAGGTTGGCTGGCTGGCTGGCTGG
 GAAAGTCATCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGGCTGG
 4125

FIG.31P

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CCAGAGGCCCTGGAGGAACTGGCAAGAACGCGATGTTGGATTCGGAGGGUCAGA
GGCCTGGCCGGCTTGAGCTCTGGCTACGCTTCCTGGCTACGGCTACGGCTACGGCTACGG
↓
F E D I R V F A I R D S D P K A I G
kan

CGTAACACCAGGAGCCCTAGCCATTTCTCCAGCTTCAGCTTAAATCAEGGGTACCCCTAGG
GGATTTGGCCCTTCGGCTAGGTGGTAAAGGGCTGGAGCTGGTAAAGGGCTGGAGCTGGTACA
↓
Y L V I F R D A W F G G L E E R I O R T A I K I E
kan

CCTAGATAGCGGCGCACACCCAGGCCACACCGAGAATCCGGPAGGGCCATTTCCACCAAGAA
GGACCTATGCGTACGGCTGGGGCTGGCTACGCTGGCTACGGCTACGGCTACGGCTACGG
↓
Q Y R D A V G I R C C D I F G S T F G N E V R I H
kan

FIG.31Q

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P A T H O C H I V V L D C F P W K A R I R P U

F A P A - G O H E E D L D D D V L G K C H R I P

A R F T K H K A D H D F F C T H M P L T H L R Z

FIG.31R

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TTGCAATAGGCCATGAGTGGAAAGGCAAGCTGACATGAGCAGGAAATTCGCCCCCTCCG
KACGIACTGGGAAACATGAAAGCCATGATGAGCTGATGAGCTGAGCTGAGCTGAGCTG

A D A M I S V E R T A P A P A K E N

Pvll

CCAAACCCGAGGTCCTTCCGCTTCACTTGACAACCCGAGGTCCTGGCGAGGATGGCTGCTGGGGCA
GGTAACCCGGCAGGGAAAGCTGAAGTCACCTTCCAGTCCTGTTGAGGCCCTCTTCGCGGGAACTGG

LITERATURE REVIEW

FIG. 315

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W E I R A N C H O I F N A G S T O V K Y E L V P

R G O H C L R T V A A N S C G I I I O A W D Y G I

ATGAGCTTCCACCGGAGAACTGGGTCAGTGCTCAATGCGAACCTTAC
TGGAGCCGGCTTGGAGCTTGGAGCTGGAGAACTGGAGCTGGAGCTGGAG

L R = V W L H P S C A H I G U C T I M

FIG.31T

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C G I C I C T G A G A I C T I G A I C C C C T C C C A T I G A A I C T I G E C G C A A G G A A C C C A U C C A G I I I A C I I G C
 G A C A G A A C T A G I C T A G A A I C T A G G A A I C C G G C C T A G I C T A G G A A I C T C C C T I I I G G I C A A M I A A C C
 BglII

PvuII

5025

5100

5175

5250

5283

FIG.31U

PTO/3B/97 (12-97)

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